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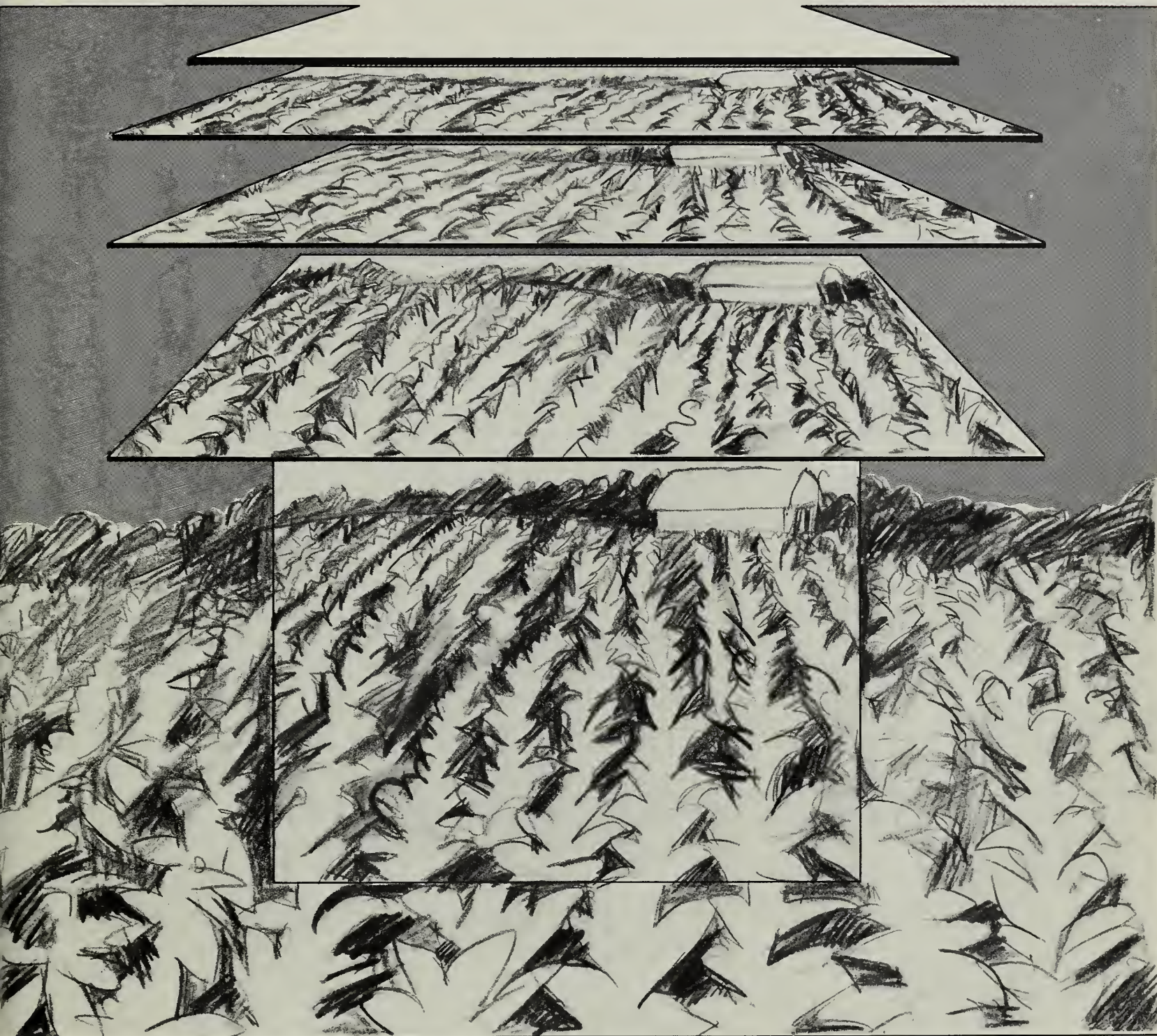
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# THE FARM INDEX

U.S. Department of Agriculture/March 1971



ENVIRONMENT: THE AGRICULTURAL PERSPECTIVE

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CURRENT SERIAL RECORDS

**The crop switch.** One thing producers made plain in the January 1 special survey of planting intentions: given a choice, they'd sow what they could most profitably grow and market in their respective regions.

The new 3-year farm program—the Agricultural Act of 1970—provides continued price/income assurance to producers of the supported commodities . . . but at the same time allows farmers to adjust acreages to changing market conditions and comparable production costs (see p. 4).

The upshot, by current indications, would be some shift in crop emphasis among regions. Briefly, the January 1 intentions survey showed that if producers carry out their January 1 plans, the regional picture would change like so in '71:

*Northwest.* Sizable expansion in spring wheat area and some increase in barley. Cutbacks for oats.

*Southwest.* Substantially more acres in cotton, though not quite as much as the 1971 allotment permits. At the same time, more land going to grain sorghum. Texas alone, the No. 1 sorghum State in the U.S., plans a 1 million-acre increase.

*Midwest.* Continued heavy emphasis on corn. Some States on the eastern fringe turning to soybeans; switch is due in part to effects of the Southern corn leaf blight and uncertainties about the availability of resistant seed this year.

*Southeast.* Buttressing of recent trend away from cotton, and decidedly in favor of soybeans. Sorghum also a big favorite in the Delta.

The net indication, for farming in the 35 States surveyed, points to a moderate acreage boost for corn, a good shot for sorghum and spring wheat plantings, some increase for soybeans, and little change for cotton.

**Soybean supply still tight.** For months it's been known soybean usage is ballooning faster than production can accommodate. Things haven't changed much.

Even though producers indicated on January 1 they'd plant roughly 7 percent more acres to beans this spring, the increment in output would fall short of market requirements—after

taking into account the probable carryover into the new marketing year beginning September next. Carryover is estimated at "minimum operating level," maybe 65-70 million bushels.

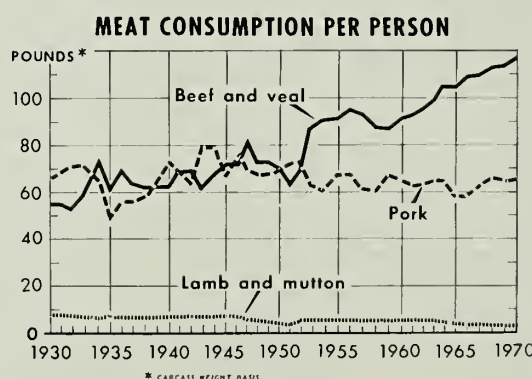
Meantime, prices will reflect the close meshing of supply and demand. For 1970/71, prices may average about \$2.80 a bushel. They ran \$2.35 in 1969/70.

**Meat explosion.** The per person use of red meat in 1971 once again is heading for a new high. Last year it was a record 185.5 pounds—3.5 above the '69 consumption.

Well over half of that amount was beef. For the first half of 1971, the beef outlook calls for little change from year-earlier levels, when usage came to 56 pounds.

Pork, however, will be up. Per capita use in the first 6 months will more than compensate for lower consumption of veal and lamb.

Overall, the January-June use of all red meats may rise by 5 pounds per person over the comparable 1970 period. This increase will probably not be sustained in the last half of '71.



*N.B. for consumers.* Economists figure retail beef prices will hold near current levels through midyear; veal prices will remain strong; those for pork to edge lower; and lamb and mutton prices to stay near the levels of last fall.

**Re finances.** This will not be the year farmers have been waiting for in terms of growth in net income. Nevertheless, prospects for easier credit and reduced interest rates will help make the going more bearable.

Recent estimates of realized net farm income in '71 indicate some slippage from last year's \$15.8 billion. Farmers

as a group can expect further rises in production costs, whereas marketing receipts will not go up as much. Prices for livestock, for one, will average lower this year.

The credit story is more optimistic. Reports received by USDA indicate rates will back off by as much as 1 percentage point by midyear, always depending on the recovery pace of the economy in general.

Funds made available to lenders and borrowers will be loosening. However—due to the rise in production costs plus more favorable interest rates—demand could strengthen for short- and medium-term credit to meet current operating expenses. Some producers may have to transfer short-term obligations to long-term real estate debts.

About the interest rates for short-term credit, the decline in the case of rural banks may be less than with the city banks. Rural banks didn't raise rates as sharply as city banks in '70.

**Cotton vs. manmades.** In 1970, for the first time in a decade, manmade fibers didn't gain yardage over cotton in the market for textiles—at least on the home front. Cotton's part of mill use last year probably maintained its '69 share of 40 percent.

In the 1970/71 crop year, cotton use stands to equal or exceed the previous year's 8 million bales. Though this is still well below the 1965-69 average (8.8 million bales), it reflects a recent acceleration in cotton use.

The cotton industry has earmarked \$10 million for its 1971 program for research and promotion, with one-half to go for research versus only a third of such expenditures going to research in recent years.

The Agricultural Act of 1970—for the 1971 through 1973 crops—also authorizes up to \$10 million a year out of government savings for cotton research and promotion. The money is to be made available from expected savings on payments to producers under the new program.

**Foreign spotlight: Focus on grains.** Worldwide, wheat trade for the year ending June 30, 1971, may be second only to the 2.3 billion bushels of 1965/66—a year when imports by the USSR

and food aid shipments to India and Pakistan were far higher than they will be this year.

As for the United States, a surge in shipments of grains and cattle may well push our agricultural exports to an all-time high. At \$3.8 billion in the first half of fiscal 1971, they were 16 percent above the same period last year and were well above the previous July-December record of \$3.6 billion in 1966. Wheat grain alone accounted for about one-third of the increase thus far this year.

These prospects are evidence of a changed world grain situation: For the first time in recent years, the world's grain supply and import needs are now quite close together.

Behind this better balance is an unusual coincidence of major developments that have either reduced available supply or increased import demand. The overall impact is an expansion of world wheat and coarse grain trade, not unfavorable to the United States. Among the background developments:

✓ Effective steps taken by Canada and Australia, in 1970 to stem record accumulations of wheat. In addition, the U.S. wheat acreage allotment was the smallest ever.

✓ Drop of 8 to 9 million tons in Europe's grain supplies—down last year to lowest level since 1966.

✓ An increase in Eastern Europe's demand for grains, but a '70 decrease in its own production.

✓ Uncertainty about possible recurrence of last year's U.S. corn blight, which took a toll of perhaps 10 million to 15 million tons from the grain supply available to either U.S. or overseas users.

These factors have served as a catalyst to trade. The combined overseas outlet for Canadian, U.S., and Australian wheat is likely to be as much as 11 million tons larger than in 1969/70.

Of this, Canada and Australia will probably provide 5-7 million tons, with Canada getting the bigger portion. U.S. shipments could increase 4 million tons.

Both Canada and Australia have enhanced their positions in certain markets (notably Latin America) by using special buyer incentives.

## FARM

## RURAL

## MARKETING

## CONSUMER

## FOREIGN

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The Farm Index is published monthly by the Economic Research Service, U.S. Department of Agriculture, March 1971. Vol. X, No. 3.

Contents of this magazine may be reprinted without permission. They are based on research of the Economic Research Service and on studies done in cooperation with State agricultural experiment stations. Use of funds for printing this publication approved by Director of the Bureau of Budget, May 24, 1967. Subscription price: \$2 yearly (\$2.50 foreign). Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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# The New Farm Act

**T**he Agricultural Act of 1970 is a landmark of legislation in at least two ways.

It puts a ceiling on farm program benefits—payments, in effect—that any one farmer can receive. And, in controlling production, it provides for a general cropland retirement program (a single “set-aside” of a farmer’s acreage) instead of the previous crop-by-crop controls characteristic of the late 1960’s.

But perhaps the most noteworthy aspect of the new law is that it represents a change in the philosophy of farm policy.

The law is written so that farmers have considerable freedom to adjust their operations in response to actual market conditions; to specialize in enterprises that have the greatest comparative advantage; and to make the most efficient use of their farm inputs.

The approach to farm programs, as delineated by the new 3-year Act, differs somewhat from approaches of the 1950’s and 1960’s. The change reflects both the experience gained with previous programs and the changing situation in agriculture.

For example, during the early

1950’s farm policy was geared primarily to high support prices and acreage controls. The objective was to keep the Nation’s total farm income high by means of artificially high market prices, and to control supply with acreage restrictions. However, farmers changed their input mix and increased output despite acreage controls. The government bought all the output that did not clear the market. Huge surpluses resulted.

The next new farm program, in 1956, focused on the soil bank and Public Law 480 (Food for Peace)—the latter enacted a couple of years earlier.

**T**he objective of the soil bank was to reduce farm output by taking land out of production. But participation was voluntary and payments did not adequately reflect productivity of the land. So, farmers tended to put their poorest land in the soil bank. But the program was allowed to lapse in 1960 before it could reach its full potential. P. L. 480 did allow much of the surplus commodities to be exported, but

usually for soft foreign currencies or barter rather than for dollars.

In the early 1960’s, the concept of farm policy shifted again—to “supply management.” Legislation in this period provided for deliberate restriction of farm supplies with a view to raising farm prices and farm income.

Total output was to be determined in such a way that all full-time family farms would receive a fair return. The policy was expected to be enforced through marketing quotas. However, when wheat farmers rejected the supply control provisions of the wheat program in a referendum, pending legislation for other crops was allowed to die.

Then came the Agricultural Act of 1965, predecessor of the current Act.

It was designed to hold up farm income while reducing market prices and ridding the country of surpluses. Farm income was bolstered not so much by government supported prices as by direct payments to farmers—and by diversion payments for taking land out of production. Hence the market price was not artificially high and U.S. farm commodities could move freely in inter-

national export-import trade.

Farm surpluses gradually shrank in the late 1960's because of expanding demand for farm products and the production controls.

Regardless of how effective the 1965 Act was, from the government's point of view it was very costly. As for the farmer, acreage limitations imposed for most crops restricted the pattern of production and did not allow for compensating adjustments in the location of production.

Now we come to the present act—signed by President Nixon on Dec. 8, 1970 to apply through 1973.

*Cropland retirement* in the 1970 Act is not new. But the current program is essentially one of general land retirement on a part-farm annual basis rather than the commodity supply management of earlier years.

As before, a farmer participates by retiring land to conserving uses. The old "diverted acres" are now called "set-aside." But there is one big difference:

Under the previous program,

farmers could substitute between wheat and feed grains. But if they grew all of one crop and none of the other they were ineligible for price support payments on the crop not grown. Under the 1970 Act, they will be permitted, within limits, to substitute among all crops (exceptions are the allotment crops—tobacco, rice, peanuts, sugar, and extra long staple cotton).

And, as long as a farmer complies with the set-aside and conserving base requirements, he receives direct payments and is eligible for price support loans.

The set-aside is used because American farmers have the ability to overproduce for both foreign and domestic markets by a substantial margin. Hence some land surely will be taken out of production.

However, on the rest of the land the farmer will be given an opportunity to shift his production both according to market needs as he sees them and in line with the most efficient use of his resources.

Such shifts hopefully will enable farmers to cut their production costs and thus raise their farm income. At the same time, our agricultural prod-

ucts will be more competitive in foreign markets.

The aim of this policy is to achieve acceptable levels of farm incomes for the Nation as a whole without disturbing the market mechanism, and do it at lower government cost.

*The ceiling on amount of payment* to any one producer under commodity programs is new. Previous programs set no limits.

When programs to support farm incomes were initiated nearly 40 years ago, most farms were relatively small, family-operated units. Program beneficiaries were therefore farm families of moderate means.

But as some farmers subsequently increased the amount of land and capital they controlled, they also reaped larger benefits from government farm programs.

In recent years, many producers received government payments that were considerably larger than the entire incomes of many nonfarm people. By 1970, public concern over this situation was sufficient to cause the change of policy under the new legislation. (1)

## Corporations Control 7% Of Commercial Farmland

Farming corporations accounted for 1 percent of all U.S. commercial farms in 1968 and controlled 7 percent of the land used by commercial farms in the 50 States.

The total number of farming corporations came to around 13,300, not counting grazing associations and institutions. Corporations owned or rented 60 million acres of all the commercial holdings.

These and other findings are contained in USDA's final report on corporations with agricultural operations. Two preliminary reports were previously issued in August 1968, for 22 States, and in April 1969, for 25 States.

The largest number of corporations were in California (1,673) and in Florida (1,215).

Nearly two-thirds of the farming corporations in the survey were family corporations; some 14 percent were owned and controlled by individuals; and 20 percent were of other types such as those controlled by groups or by unrelated individuals.

Other survey findings included:

- Corporate farms had gross sales of farm products totaling \$3.3 billion in 1967, the year prior to the survey. Their sales accounted for 8 percent of all U.S. farm sales.

- Nearly a fifth of the 13,300 corporations had farm product sales of less than \$20,000. One fourth sold \$40,000-\$99,999. Slightly over a

tenth sold \$500,000 or more.

- Average size of holding (owned or rented) was 4,511 acres per farm, or roughly 8 times larger than the average for all commercial farms in 1968.

- Regionally, the Mountain States had the biggest holdings, averaging 11,423 acres. This area also accounted for more than half the total land operated by corporations in the 50 States.

- A majority of the corporations had crop enterprises as opposed to livestock. Among crops, hay predominated. After it came corn, wheat, other grains, soybeans, vegetables, cotton, fruit, and certain specialty crops. Of livestock, beef cow herds were first, then fed cattle, milk cows, and hogs. (3)

## EVERYBODY'S FARM

If all the land used for farming in the United States were divided equally among U.S. families, what would be your family's share?

The answer is slightly more than 27½ acres. To the city dweller or suburbanite this would seem like room to roam. But the average farmer, accustomed to more than 385 acres, might feel a bit cramped.

About 22 of your 27½ acres would be actually in your farm. A little less than 9 acres of your farm would be cropland; nearly 10 would be pasture, grassland, or range. You also would have about 1½ acres of woodland which you use for grazing, and 1½ acres in farmstead, roads, and nonfarm uses.

In addition to land in your own farm, you would run livestock on about 5½ acres of land rented or leased from the government. About half would be grassland, pasture and range, and the rest would be woodlands—mostly lands administered by the Forest Service.

Although your farm contains nearly 9 acres of cropland, you planted less than 6 acres to crops in 1970. The rest of it was in fallow, held out of production under government programs,

or idle for one reason or another. You had nearly 3½ acres in grains, over half of which were corn and wheat. You had over an acre in hay, and a soybean field of eight-tenths of an acre. Most other crops were on garden-sized plots.

Your herds and flocks present some puzzling biological problems. You had only one-fourth of a dairy cow but she managed to produce 2,287 pounds of milk in the year. The beef cattle herd of 1.8 head dropped three-fourths of a calf, while your lone hog had a litter of 2 pigs. Only four-tenths of a sheep roamed your pasture.

You had 6.4 hens during 1970. They laid 113 dozen eggs. You also produced 58 broilers, but only 2¼ turkeys.

Your family farm was valued at \$4,086 on the 1970 real estate market. As the year began, you had \$460 worth of livestock and poultry on hand and \$211 worth of crops. Investment in machinery and motor vehicles amounted to \$671.

If you are a city man, this farm may give you more elbow room than you are accustomed to, and perhaps something of the spirit of agrarian living. But, as every farmer knows, it won't make you rich.

Your 27½ acres grossed \$1,068 in 1969. Production expenses took \$752 of that, leaving you a net income of only \$316. (4)

## Mechanization Could Ease Lot of Broomcorn Grower

Broomcorn, which goes to make the business end of the common broom, is one of the few U.S. crops that is still harvested by hand.

But with the way labor costs are soaring these days, many broomcorn farmers can just about break even. The withering demand for the old-fashioned broom isn't helping the situation either.

Now, the broomcorn growers of America are getting mechanized. Scheduled for field-testing by mid-year is a mechanical harvester being developed under a joint project of USDA, Texas A&M University, the Economic Development Administration, and the broom and broomcorn industry.

Many in the industry are convinced this machine will do the job as well or better than hand labor. If successful, the harvester could cut harvesting costs in half.

Broomcorn (technically, not corn but a variety of sorghum) was once produced commercially from Massachusetts and Virginia to the West Coast. In recent decades this crop has been squeezed out of prime farmland to lower value and marginal acreages in the Southwest.

Nearly all the U.S. production now comes from about 100,000 acres in Oklahoma, Colorado, New Mexico and south Texas. The farm value last year was approximately \$6 million. Currently, broomcorn sells between \$300 to \$400 per ton.

Numerically, broomcorn farmers have declined with the falloff in demand for brooms. As recently as 1964, 1,400 farmers grew the crop in combination with wheat, grain sorghum, and livestock. Today they probably number no more than 500.

But even for the remaining farmers, high costs of labor are becoming prohibitive. Moreover, manual farm labor is getting in short supply. In some areas it is becoming nonexistent for "stoop labor" crops.

Direct labor costs may be as much as 80 percent of broomcorn's produc-

tion expenses. For the other major crops of the region—such as wheat and grain sorghum—labor costs account for roughly 15 percent.

The most laborious part of harvesting broomcorn is cutting the "brush" that grows up from the center of the 4-to-15 foot high stalk. A ton of cured brush contains as many as 70,000 individual brushes. At present, each must be cut or pulled by hand. In subsequent operations, care must be taken to avoid tangling the fibers.

Making money in broomcorn depends critically on getting the crop



in on time—a period of a week to 10 days once it reaches a peak of ripeness.

Also, the customary practice of sun drying the brush for 2 or 3 days in the field runs the risk of damage from rain and other weather hazards. This underscores the need for a second step in broomcorn mechanization—a centralized plant for drying and bundling the broomcorn to a uniform end product. USDA and the industry plan to undertake this phase of mechanization as soon as the mechanical harvester is commercially available.

Good quality broomcorn has long and straight fibers ending in many small branchlets. A light green color is preferred in the U.S. and Canadian markets.

The shorter fibers go to make the inside of the broom; the medium fibers, the broom's shoulders; and the longest fiber, which is also the best quality, makes the outside.

No other fiber, natural or man-made, is as well suited as broomcorn for making household floor brooms and whiskbrooms.

Special though it is, the common broom can't compete successfully with vacuum cleaners—for cleaning carpets—and with mops for hardwood and tile floors. Lately, the plastic synthetic broom is also giving the real thing a run for its money.

The growing popularity of wall-to-wall carpeting largely accounts for lagging broom sales, along with the surge in apartment construction. These new dwellings—many of them built for single renters and small families—devote less space to kitchens, basements, porches, and sidewalks, i.e., broom territory.

The railroad industry, once a steady customer for brooms by the thousands, long ago stopped buying them for clearing tracks and switchers of ice and snow. Today the job is done by electric heaters and steam equipment.

In 1930, broom use (including imports) totaled about 50,000 tons of broomcorn equivalent. By 1969 consumption had dropped to less than 25,000.

Domestic production of broomcorn meanwhile shrank from 46,000 tons in 1946-50 to 23,000 in 1963-67 and approximately 15,000 in 1970.

The difference in total use and production was made up by imports, mainly from Mexico. (5)

## Hybrids and Brisk Demand Spur Sorghum Production

When the first commercial varieties of hybrid grain sorghum came on the market in 1956, farmers took to them almost immediately. They adopted these higher yielding types even quicker than they did hybrid corn seed back in the thirties.

Today's sorghum grower gets a grain yield almost three times greater than he did prior to the development of hybrids. The 1970 yield averaged over 50 bushels to the acre.

U.S. production of grain sorghum

has also soared—from 200–250 million bushels in the mid-1950's to about 700 million in 1970. This, despite acreage cutbacks under the feed grain program.

But it took more than the yield factor to maintain growers' interest in this crop: grain sorghum's usage is at record levels.

The time hybrid sorghum entered the picture was also about when the cattle feedlot industry in the West and Southwest entered a period of rapid expansion. In the eight States producing the bulk of the U.S. sorghum crop, the number of cattle on feed more than doubled during the decade of the sixties.

The major sorghum States are Nebraska, Kansas, Oklahoma, and Texas—places where the hot and dry climate doesn't favor corn or soybeans.

Feedlot operators progressively turned to using more locally produced sorghum, and less corn that had to come in from the Midwest.

Other ingredients fed along with sorghum in cattle rations had long been available in the West and Southwest—cottonseed meal and hulls, molasses, urea, and roughages.

As sorghum production dovetailed with the growth in the cattle business, the grain's usage in cattle rations jumped sharply. In the 1960–69 period, sorghum feeding increased by a yearly average of 25 million bushels. In 1969/70, feeding reached 652 million bushels, the highest ever.

Another 9–13 million bushels of the annual supply goes for food, industrial uses, and seed. Also, over 100 million bushels are exported.

So fast has domestic demand risen that sorghum usage has outstripped production in most years since 1961. Year-end carryovers are getting smaller, as is the total annual supply. For the marketing year beginning October 1970, the supply is estimated at 935 million bushels—smallest in 12 years.

Producers' prices are mirroring the tighter supply situation. Prices to farmers this year are seen averaging somewhat above the \$1.89 per cwt. received in 1969/70. (6)

## Wheat Feeding Surges As Use Heads to Postwar High

Extensive use of wheat as feed for U.S. livestock has been a dead issue for the past 20 years. But it has now come very much alive.

The resurgence of wheat feeding became apparent a couple of years ago when it suddenly soared to 176 million bushels—more than triple the usage in 1967/68.

This year (ending June 30, 1971), use of wheat as feed may reach 235 million bushels. If so, it would rival the record levels of 25 years ago when World War II wheat was moved into feed channels with the help of a government subsidy.

Main reason for the revival of wheat feeding is, of course, the extremely competitive price relationship of wheat and corn that has developed in recent months. The spread between the two is likely to remain narrow and continue to make wheat an attractive feed item.

Hard winter wheat will probably be the most favored for feed this year, since it is in large supply. (Total wheat supplies for 1970/71, at about 2.24 billion bushels, are off slightly from the 2.28 billion bushels a year earlier.)

Another factor that implies con-

tinued heavy use of wheat for feed is the changing attitude of many farmers toward the full potential for wheat usage.

Commercial feed manufacturers and large feedlot operators have viewed wheat as a feed for some time. They have responded accordingly when wheat/feed grain price spreads narrowed.

But many wheat growing farmers with accompanying livestock interests have been slower to alter their image of wheat. They have continued to regard it mainly as a crop to bring in cash even when its price is at feed grain levels.

In recent years, however, there's been an increase in the volume of wheat "fed on farms where grown." Though these statistics are somewhat restrictive in concept, they indicate the comeback of on-farm use of wheat for feed in the United States.

### USE OF WHEAT AS FEED

	Total	On-farm
	Million bushels	
1966/67	99	26
1967/68	57	43
1968/69	176	61
1969/70	216	64

Farmers in other parts of the world—notably Europe—have often been more prone than their American counterparts to feed wheat.

But governments in many countries subsidize the denaturing of wheat to make it salable only as feed when government price incentives would otherwise have kept it out of feed channels. This is frequently done when wheat is not of high enough quality to be competitive in the world market and would require large export subsidies to move into international trade.

When wheat is denatured it is in effect rendered unsatisfactory for use in food products. The most common method of denaturing is to discolor the wheat by adding certain chemicals. Sometimes ground nut shells or other types of debris—edible for animals but unpalatable to people—are also added. (8)

### Woodland Moonlighting

There's an often overlooked income-increasing possibility for northern New England dairy farmers who find it unfeasible to expand their dairy herd.

If they can manage their dairy enterprise with greater efficiency, they have time for forestry work to augment the family income through sales of hardwood pulp, pine sawlogs, or Christmas trees.

A sociologist team has developed models for four sizes of northern New Hampshire farms, where average farm size was 263 acres. Depending on labor efficiency in both dairy and woods work—and value of the timber product—a farmer's returns from a timber enterprise alone could run as high as \$6,500 with average management. (7)



## Environment: The Agricultural Perspective

*Agriculture—in going about its essential business—is changing the ecology. But concern about environment is only a new chapter in a story going far back.*

“The earth is fast becoming an unfit home for its noblest inhabitant,” warned George Perkins Marsh in the mid-1800’s. One of America’s first conservationists, Marsh said that unless somebody did something, man would soon reduce the world to “a condition of impoverished productivity, of shattered surface, of climate excess, as to threaten the depavation, barbarism and perhaps even extinction of the species.”

The conditions that Marsh de-

plored had been centuries in evolution, and in America went back to the exploitation of the land by our earliest settlers. By them, the land was seen as an essential provider of food, and later as an equally essential source of profit. The land had to be cultivated quickly . . . and by whatever means possible.

As they migrated westward, Americans relentlessly farmed the land for survival, generally at the expense of nature’s protective ground cover. In the West, it was the wind more than water that was the major force of erosion. In 1935—during the Dust Bowl—great clouds of middle America’s soil were hanging over Washington, D.C. and blowing into the Atlantic.

Until the 1930’s, relatively few people were interested in the environment. Washington and Jefferson were early conservationists who, among other things, promoted crop rotation as a way to preserve the soil’s natural fertility. Several lesser known men such as Jared Elliot, Samuel Dean, and Solomon Drown also argued for the conservation of our natural resources. Following them, Theodore Roosevelt’s administration (1901–1909) took a general interest in conservation, especially preservation of our natural forests and the irrigation of arid lands.

But in the thirties a large segment of the citizenry was aroused by the abuse of the land. Depression, drought, and the Dust Bowl set the

stage for launching a set of emergency and long-range programs aimed at reclamation, improved farming, and watershed development.

Agencies such as the Civilian Conservation Corps, the Soil Conservation Service, and the Tennessee Valley Authority didn't immediately solve problems that had been smoldering for a couple hundred years. They did, however, open the way to a successful attack on what had been America's greatest environmental threat—the misuse of its natural resources.

About the time that the country was generally waking up to the danger of erosion and mismanagement of the land, agriculture's ecological problems were only beginning.

In 1939, a Swiss chemist formulated a synthetic compound called "dichlorodiphenyltrichloroethane." Most people didn't worry about the jaw-busting name. They just called the compound DDT.

During World War II, DDT proved a Godsend. In 1944 it was the key factor in breaking a typhus epidemic in Naples. From then on it was used extensively to control lice and mosquitoes. Wartime problems with typhus and malaria were significantly reduced as a result.

After the war, factories that had been turning out DDT for the military began to produce it for farmers. Until about 1945, synthetic organic chemicals accounted for only about 10 percent of the total dollar sales of farm pesticide chemicals. Today, synthetic organic pesticides account for more than 90 percent of the pesticides produced.

DDT, of course, has not been the only insecticide on the market. Nor has it been the only chemical aid sold to farmers. The use of fungicides has also increased in the past couple of decades. And herbicide sales have gone up faster than insecticides or fungicides. Similarly, new chemical fertilizers have found expanding markets.

The problems resulting from these chemicals are well known—the in-

creasing resistance of insects to pesticides, chemical buildups in streams and the soil, and damage to wildlife.

But for years, the use of chemicals by farmers has been essential to assure abundant harvests of high quality.

In monocultures, a pest or disease attack can spell disaster unless the problem is immediately controlled. The corn blight that moved into parts of the South and the Midwest last summer provided an eye-opening example.

Precisely how much of our agriculture's progress has been due to use of chemical fertilizers and pesticides would be hard to determine. Overall, however, crop production since 1940 has gone up 55 percent and livestock output, 66 percent.

In the case of livestock, developments in engineering and management systems, and other technological advances, have enabled farmers to feed large numbers of livestock in restricted areas. Beef feedlots have been greatly expanded and there's been a shift toward large scale dairy, egg, swine, turkey, and broiler enterprises.

But progress in livestock production has also created a mammoth waste disposal problem, much in the same way as higher crop yields have been accompanied by fertilizer runoff and pesticide residues.

A 1,400-pound cow produces about 10 tons of manure a year. The Nation's livestock collectively produces in the neighborhood of a billion tons of manure annually. As the number of livestock operations with large concentrations of animals increases, the problem of safely disposing of the animal waste becomes more crucial. Adequate disposal systems for the economical handling of large volumes of manure at specific locations have not been developed.

The salting up of soils through irrigation is another worrisome area with many imponderables.

Without adequate drainage to carry irrigation water below the plants' root system, salt content in the soil builds up and crop yields

suffer. And when drainage is sufficient, there may be an increase in salinity levels in streams and other water bodies.

In California, the Salton Sea—65 years ago a fresh water lake—is now slightly saltier than the ocean as a result of the inflow from irrigation systems. If the salt concentration goes much higher, the hatchability of fish eggs will be adversely affected, as will the future of water-based recreation in the Imperial Valley.

Still another problem—the erosion of soil by water—is now less troublesome than it was before the widespread use of certain conservation practices. Nevertheless, according to one estimate, 3 billion tons of sediment are being deposited each year in this Nation's reservoirs and valleys. Another 1 billion tons are carried by rivers to the ocean.

Silt-laden water bodies not only endanger fish and wildlife, but also create real problems for hydroelectric plants and other industries needing a clear water supply.

Many of the environmental problems that have developed in agriculture since World War II still seek solution. Research work, however, is going on continuously—especially in the pesticide area. With the restrictions now placed on chemicals, the need for new controls is pressing.

Scientists are therefore intensifying their studies of nonchemical ways to control insects, including male sterilization, use of trap devices, the introduction of natural predators to destroy harmful plants and insects, and the development of new plant varieties resistant to disease and insect pests—to name only a few.

But all this work takes time, and a lot of money for research. For example, for such crops as tomatoes and wheat, scientists need as many as 10 years to breed resistant varieties and to produce enough seed for commercial use.

Not only is research needed on biological and physical aspects for improving the environment, but also on

economic and social factors that may help determine priorities for programs to upgrade environmental quality. Examples: Research to more carefully estimate adverse effects of all types of waste disposal; economic analyses of alternative pollution abatement methods; and evaluation of different incentive systems to encourage private action for the public interest.

Whatever the method of pest control, and whatever changes are brought about in other production techniques and land use practices—clearly agriculture and environmental problems will continue to be inseparable. (9)

*[This is the first in a series about agriculture and the environment. The next will deal with the competition for land between agricultural and nonagricultural users.]*

## Small Roads Aid Ozarks More Than Superhighways

Highway construction often plays a prominent role in plans to stimulate economic development in rural, poverty-riddled areas.

But the priority given to road building may not be valid for all depressed localities. Take, for example, the Ozarks Economic Development Region—a 125-county section carved from Arkansas, Oklahoma, and Missouri.

Poverty, like the region's spectacular valleys, cuts deeply into the Ozarks' character. Per capital income is even lower than in Appalachia. And in the past, area residents have been highly dependent on agricultural employment.

Despite the business generated by a burgeoning tourist and recreation industry, employment opportunities remain low. And behind that lush scenery that awes tourists lurk the familiar trappings of rural poverty—including the marked absence of young people.

Heading east or west through the Ozarks Region poses no major problem—it's fairly well served by the in-

### Charting Agriculture's Course

Economists and others who follow trends in U.S. agriculture are invited to write for a free copy of the new 1970 *Handbook of Agricultural Charts*.

Over 150 charts and tables are featured in the Handbook's five sections, including—The Domestic Situation (prices received by farmers back to 1910), The Family (costs of raising a child to age 18), Population and Rural Development (employment outside metropolitan areas), Commodity Trends (for nine principal commodities), and Foreign Production and Trade (agriculture's contribution to the U.S. balance of payments).

Copies of the Handbook are available on postcard request from the Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250.

The charts are also available as black and white photos or color slides, singly or in full series. Prices: glossy photos \$1.50 each (8x10 inches) and \$1.20 (5x7); slides, 30 cents each and \$19 for the set. Write the Photography Division, Office of Information, USDA, Wash. D.C. 20250. (11)

terstate highway system.

Several U.S. numbered roads lace through the north-south routes—but no interstates. And there are few highways in the mountainous areas.

To determine the impact of highways in the Ozarks Economic Development Region, a recent study by the Economic Research Service took mileage counts of all rural roads for the years 1954, 1959, and 1963. The roads fell into two basic categories: access roads (all multilane, Federal and State highways) and feeder roads (all local and unpaved roads).

Total mileage for each road type was compared with 1959 incomes or 1960 employment statistics.

Results showed that multilane highways don't necessarily stimulate economic activity, but are a follow-up feature of high incomes and employment levels. Local roads, however, usually precede high employment.

All told, highways were not a crucial factor in spurring economic development in the Ozarks Region.

If highways are built, those that would best serve the area's interests are two-lane paved, State-numbered roads to link existing national routes, and paved county roads to connect outlying rural areas with urban centers. (10)

## Second Home "Towns" Success at Lake Latonka

Before bulldozers start clearing land for a new second home community, many planners, businessmen, and civic leaders want to know how the local economy will be affected.

For answers, they might look to the Lake Latonka development—over 1,000 acres of northwest Pennsylvania cropland converted to a 1,600-lot recreation subdivision surrounding a 270-acre lake. The development began in 1964. All lots were sold by 1966.

Developing the Lake Latonka community cost about \$7 million between 1965 and 1970. The investment is estimated to have increased business activity during this period by as much as \$14 million. About one-fourth of the activity would involve local businesses in the lake development area.

It was expected that money to purchase lots would be borrowed from institutions where buyers resided permanently—mostly in the Pittsburgh and Youngstown, Ohio, areas. Surprisingly enough, over 75 percent of these funds were secured from lenders in the Lake Latonka area.

Moreover, most of the buyers tapped local funds to finance home construction. Interest on these loans has introduced substantial quantities of "outside" money into area coffers.

Local merchants have felt the impact too. Through 1970, lot owners spent an estimated \$3 million for recreation equipment, home furnishings, and other purchases evolving from use of their lots.

Up till now, maintenance expendi-

tures for the second homes have been minimal. By 1975, however, homeowners will probably be spending a third of a million dollars annually to keep their properties in shape. Presumably, this will generate over half a million dollars in local business activity.

Before being purchased by the development company, the Lake Latonka site was assessed at less than \$30,000. And it yielded less than \$2,000 in annual tax revenues.

Development, however, has boosted tax resources tremendously. Over a 2-year period, the area's two townships, Jackson and Coolspring, had a 50-percent increase in tax collections—without raising tax rates.

Transforming farmland into a recreation community hasn't hindered the region's agricultural output either. When acquired by the developer, only part of the Latonka location was being used for farming. And similar land resources, lying idle, were close at hand. (14)

## House Is Not Always Ideal "Home" for Oldsters

"Mrs. Lewis is an 81-year-old widow living in a substandard house over 50 years old. Her total 1969 income was \$1,320. Her tax bill was \$556.00, an increase of \$161.00 over 1968. All she had left for living expenses was \$764.00."

This case, drawn from Michigan housing hearings, points up a worry of older Americans: finding housing suitable to their needs at prices they can afford.

As people grow older, their homes become a more integral part of their lives. Many older people want to move to smaller quarters or to a rented apartment—especially after a spouse dies. Some want to move to warmer climates.

But they can't. Their incomes are usually eroding and they are caught in a squeeze between rising costs of housing and their fixed, often very low income levels.

In some cases, their plight may even be aggravated rather than

### Club Notes

Among Wisconsin's many privately owned recreation enterprises based in rural areas, gun clubs provide comparatively little added income.

A close look at 23 clubs—of roughly 100 Statewide—indicates that nearly all clubs are nonprofit associations owned by members and managed by club officers.

Investments range from \$100 to \$50,000. Operating incomes are derived mainly from target shooting and contests.

Unlike most other outdoor recreation establishments, however, gun clubs are open all year. (15)

helped by urban renewal and redevelopment that forces them to move.

One proposal to alleviate this situation is the establishment of a public corporation that would buy, sell, rent, and renovate residential property for senior citizens.

Such a corporation might buy the home of a sick, aged person and pay his nursing home costs. It might remodel a large house so that several oldsters could live there at reasonable rent.

It might also help older people to relocate in retirement villages or in other communities. To do this, it would advance a down payment on the new dwelling unit at a modest charge. The older person could retain his own home until he found out whether he wanted to remain in his new environment. (13)

## Birthrate of Rural Woman Outpaces City Counterpart

Country living goes hand in hand with larger families, or so it seems from statistics on birth rates.

According to the 1960 Census—the latest published figures—rural women nearing the end of childbearing age (35–44 years) had borne an average of 3.3 children. This was roughly 50 percent more than was needed to maintain the population at a constant level.

The birth rate required to replace a generation is 2.1 children per family (2 children to replace the parents, plus .1 to offset deaths of children).

In urban areas, in contrast, women had averaged only 2.4 children—or 15 percent above what's needed to maintain population.

The figure for rural areas may have tapered slightly since 1960, but is still above 3 children per family. The urban figure has risen somewhat.

Demographers point out there has never been a generation of American rural women whose reproduction rate was lower than that of urban women.

Among the possible reasons: children are often an economic asset in farmwork; unmarried females in rural areas tend to move to the cities to get jobs; and birth control is less widely practiced in the countryside, due to cultural isolation and relative lack of access to family planning information and services. (12)

## Canoe Trail Takes A Moneymaking Bend

How can a community capitalize on a meandering river?

Some enterprising individuals and organizations in Wadena County, Minn., have developed their Crow Wing River into a moneymaking canoe trail and camping site. The project was launched in 1964. An estimated \$50,000 was spent in 1967 by users of these facilities.

About one-third of the fee-paying canoeists are in family groups averaging 6 to 7 members, and 40 percent of the users are 15-19 years old.

Equipment purchases and rentals accounted for about 44 percent of expenditures by canoeists, food 36 percent, auto services 6 percent, and lodging 2 percent.

To complement the canoeing setup, the Neighborhood Youth Corps developed a 55-mile saddle trail—also suited to hiking and snowmobiling. Canoers share their 14 campsites with the riders and hikers. (26)

# CUTTING COTTON COSTS

*The cotton industry, to enhance its marketing position, seeks ways to trim expenses in every phase of production, beginning on the farm.*

To prosper and grow in the future, the cotton industry is trying to cut production and marketing costs—and increase efficiency as well.

Over the past decade, competition from manmade fibers intensified, along with competition for land from alternative crops, such as soybeans.

Cotton captured a little less than 40 percent of the domestic fiber market in 1970, compared with 65 percent in 1960. Blends of cotton and synthetics (usually polyester) displaced many 100-percent cotton fabrics—with cotton often at the short end of the combination.

Guarded optimism, however, prevails for the 1970's. Current research may help the cotton industry pare costs and maximize quality and efficiency.

To enhance cotton's marketing position, expenses must be trimmed at all levels—beginning on the farm. Cost reduction research at the Delta Branch Experiment Station in Stoneville, Miss., has been expanded to include planting and weed control tools, insect control, plant breeding and harvesting.

Last year, the Stoneville Experiment Station tested a modified stubble planting method. Stalks from the previous harvest were shredded and subsoiled in the fall. And in spring the seedbed was hipped (top couple inches of soil turned) once or twice.

This method proved far superior to conventional stubble-bedding, which requires several treatments of expensive herbicides to control spring weeds.

The modified stubble planting sys-



tem resulted in better stands, faster growing seedlings, and yield increases of about 5 percent. Moreover, the cost reduction was over \$6 per acre.

Postplanting practices, particularly for weed control, have received intensive study in recent years. Although chemicals have gained wide usage for this purpose, the number of required applications is costly in time and money.

Three changes in current cultivation practices will be tested at Stoneville this year. Crossplowing will be reintroduced to control weeds between rows and eliminate time-consuming hoe labor. Only one treatment of postemergence herbicide will be applied in the conventional manner. And a flame cultivator with a water shield will be used in place of most postemergence herbicide applications.

Cross plowing will facilitate use of a sensing postemergence applicator—a new tool that sprays herbicides only when a cotton plant is sensed.

Using all three methods might easily result in a 60-percent reduction in the quantity of herbicides used. Also, it would reduce the number of trips over the field—costly in man-hours.

Mechanical harvesting has revolutionized the cotton industry, causing tremendous reductions in time and labor. In 1970 almost all the cotton crop was mechanically harvested, compared with about half in 1960.

But research continues for more efficient harvesting machines. A 4-row cotton combine is now being tested at Stoneville. If and when all the kinks are worked out, this machine should prove far more efficient than the standard 2-row picker, and less costly in field time.

As the name implies, the new harvester combines several operations, including cutting and shredding stalks. This reduces preplant costs for the next crop.

To be effective, however, improvements on the farm must be matched at the processing level.

Additional conditioning and cleaning equipment have been installed in

most gins to facilitate ginning of machine harvested crops. And ginners have added new high speed gin stands and related equipment to complement the faster harvesters.

Investments per gin rose to about \$500,000 in the mid-1960's and have probably increased since then. But as a result of increased efficiency, ginning costs have risen only gradually—despite increasing wage rates.

In warehouse and compress operations, labor still accounts for nearly half the costs. Labor requirements for grading cotton quality according to USDA specifications could be drastically reduced with the development of instruments to perform this task.

Packaging is another operation with labor-saving potential. Cotton is now being baled by machines that produce about 35 bales per hour. Several men are usually required to operate each machine.

A new packager is being developed that can be operated by only one or two men. Hopefully, it will produce more compact bales—at a higher hourly rate—to eliminate the need for successive compressing operations.

Cost-conscious textile firms are trimming expenses also. Some firms have combined two or more processing stages. For example, some are doing both spinning and weaving, or weaving and finishing. And a few textile companies have combined all operations from spinning to retailing.

In 1966, the Cotton Research and Promotion Act was enacted with the express purpose of expanding cotton markets. Upland cotton producers contribute a \$1 per bale assessment; a significant part is for research directed to cutting production and marketing costs.

Research and promotion activities for the 1970's will probably be expanded to strengthen cotton's competitive position with manmade fibers. And work will undoubtedly continue for an optimum quality 100-percent cotton fabric that's permanent press and soil resistant. (16)

## Giant Ships Promise Bigger Hauls, Lower Rates

What's marine architecture got to do with marketing grain? More than the average person might think, with closer ties in store for the future.

Over the next decade, world demand for grains of all types—for all uses—promises considerable expansion. And the United States is the world's leading producer of wheat and all other grains combined.

Forecasts show foreign livestock eating over 500 million tons of coarse grain annually by 1980. The biggest feed importers: Western Europe and Japan.

Worldwide wheat use is predicted to reach 355 million tons by decade's end, about a 30-percent increase over present levels. Chances are Japan will be our largest customer.

Developments in the maritime industry point to larger ships plying the seas with our grain and other exports. During the past 5 years, average cargo capacity has risen dramatically—up to 24,000 tons for bulk carriers and 31,000 tons for tankers.

And that's just a beginning. Today there are tankers capable of carrying over 300,000 tons. Bulk carriers of 185,000 tons and tankers of 760,000 tons are predicted for 1980.

On a *per ton* basis, building and maintenance expenditures are far less for these giant ships than for their smaller counterparts. For example, 1968 per-ton construction costs on a 50,000-ton ship were \$100, compared with \$75 on a 260,000-ton vessel.

The most notable savings per ton are on crew costs—a 500,000-ton ship requires roughly the same size crew as her 50,000-ton sister.

All told, the floating giants could offer grain exporters 50-percent reductions in freight rates.

But with the savings come some problems. The greatest drawback is that relatively few ports and access channels are deep enough to accommodate these massive ships. In the United States, only the Puget Sound harbors can handle a ship carrying

300,000 tons of cargo.

Even an 80,000-ton vessel has trouble finding a port. Seven U.S. harbors currently can handle ships this large. And none of them are Gulf ports—major embarkation points for grain exports.

The full cost-paring potential of the giant ships can't be realized unless substitutes for deep-water ports are developed, or existing harbors deepened—a costly venture.

Typical channels have already been dredged to bedrock. Removing bedrock runs up to \$25 per cubic yard. Add to this the expense of relocating utility lines lacing the harbor bottoms of most port cities. And some cities, like Baltimore and Houston, face the prospect of having to shift underwater automobile tunnels.

Both Japan and Western Europe—our largest potential grain markets—have workable ports for the giant ships. This may further induce U.S. grain exporters into the same decision already made by petroleum shippers and other exporters—that harbor development might be a sound investment (17)

## Plant Site Counts Big In Pea-Freezing Business

A food processing plant in an unfavorable location is like a gas station on the wrong side of the road. Neither is likely to show much profit.

This is one reason why locations of food processing enterprises are continuously shifting away from their original sites. These locations were often chosen because of local or regional considerations, such as nearness to production areas.

But with the passing of years, markets for processed food products have become "nationalized." Production stages have been integrated. The economies of large-scale operations have in general been proven.

As a result, many old plant sites have been abandoned in favor of ones with national or international dimensions and advantages.

This trend has greatly augmented the capital outlays needed for optimum sized new plants. Selection of the best possible location has thus become more critical.

The locational options for *new* plants—not for shifts of current operations—were studied for a single industry: frozen green pea processing.

(This food industry has been one of the Nation's fastest growing. Output has grown from a mere 25,000 pounds in 1937 to around 430 million pounds today. Over the same period, consumers have increased their average yearly helping from about 2½ ounces to about 2½ pounds.)

Tentative results of the study suggest that from a minimum cost standpoint, green pea freezing should be dispersed—with a few large plants in the East, Midwest, and West.

The analysis also suggests that:

—The Washington-Oregon-Idaho complex will keep its dominant position in green pea freezing, but its proportion of the total pack might decrease in the future.

—States with the greatest apparent potentials for expansion under present cost structures are Delaware (and adjacent Maryland counties), New York, Pennsylvania, and Wisconsin. But with small to moderate cost changes, a sizable amount of Wisconsin output could shift to Michigan.

—Illinois and Minnesota may drop back significantly in frozen pea output. The same is likely to be true of California, because of high cost structures.

However, slight changes in raw product costs, labor wages, length of season, overhead budgets, freight rates and taxes could change optimum locations and shift production to adjacent States.

Considering the total frozen pea industry, use of large plants would reduce costs. But the selection of a State or area in which to locate is probably more important (within limits) than a plant's size, or its specific location within an area. (18)

## New Law Brings Stricter Controls to Egg Marketing

Controls over the marketing of eggs and egg products have been tightened under a new Egg Products Inspection Act signed into law in late 1970.

Effective June 30, 1971, the Act will require continuous inspection, under USDA supervision, of establishments that process frozen, liquid, and dried eggs for human use. In the past, such inspection has been on a voluntary basis.

The Act will also prohibit—beginning June 30, 1972—the distribution of unwholesome shell eggs and their use in food products.

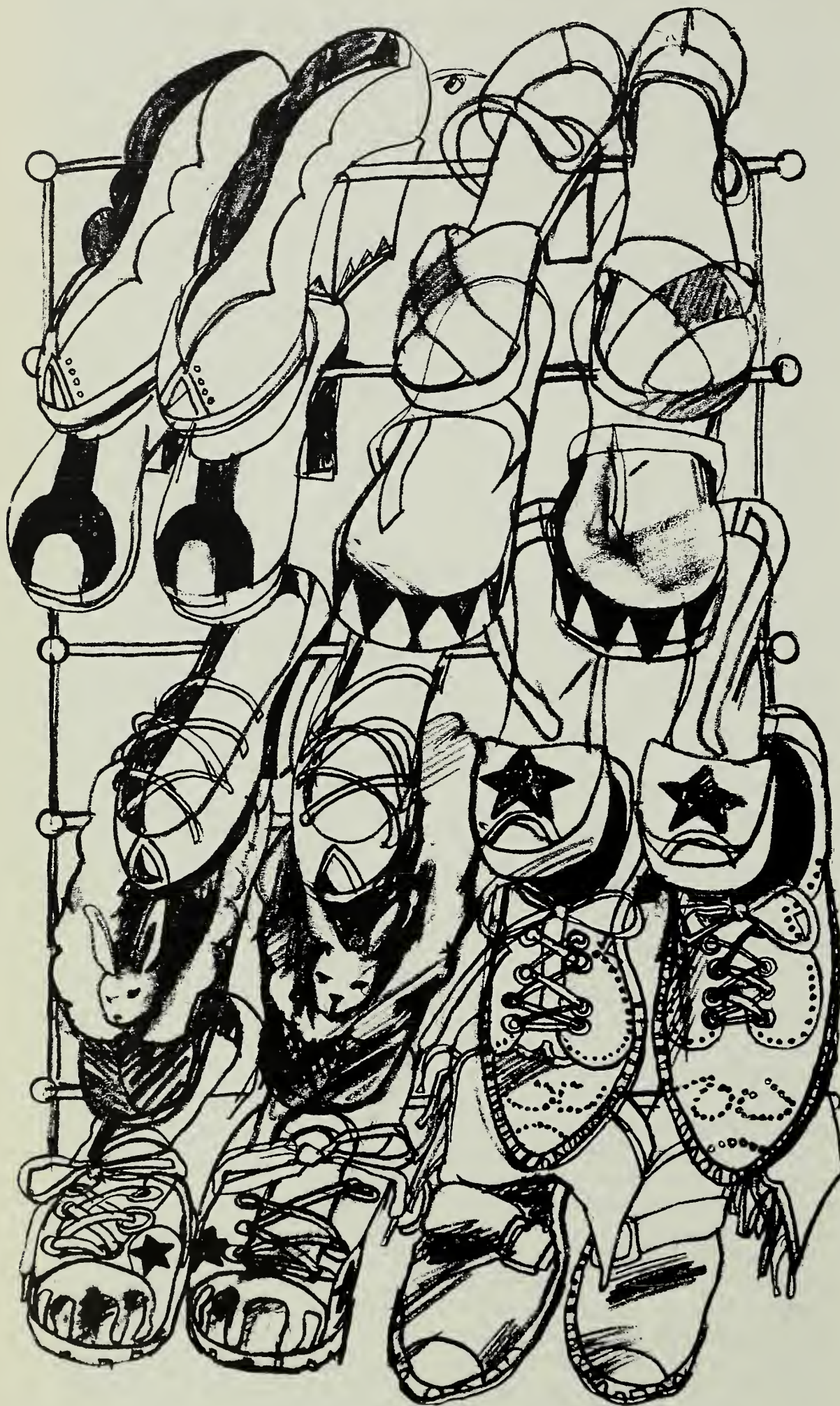
A key objective of the law is to prevent dirty, leaking, and cracked eggs from being sold to the consumer, or from being used in manufactured egg products without proper controls. Strict controls are needed because these kinds of eggs may contain harmful bacteria.

The inspection program requires plant approval by USDA officials and pasteurization of all egg products, specifies plant operating procedures, and provides for testing of the finished products.

But specifically exempted from the Act's requirement is any egg dealer who (1) has an egg processing plant that receives or breaks only clean, whole eggs—those within the limits allowed under consumer grade standards; (2) sells eggs or processed egg products from his own flock directly to household consumers; (3) has an annual egg output from a flock of 3,000 hens or less; or (4) sells, transports, possesses or uses only eggs that meet tolerances for restricted eggs under U.S. consumer grade standards.

Egg producers who ship nest-run eggs to a handler to grade for a retail market would not be directly affected. Producers with grading operations (over 3,000 hens) will be subject to spot inspections—as will all other egg packers—to assure their eggs are being handled as prescribed by the Act. (19)

## Shoppers and Shoe Uppers



If the shoe fits, do you wear it? Or do you quickly cast it off, along with its mate, and relegate it to the box it came in?

After you buy a pair of shoes, how many second thoughts do you have about your choice?

Are the shoes really comfortable? Did they "break in" fast? Do they shine up easily and brightly? Are they resistant to scuffs . . . scratches . . . water? And do you think you got your money's worth?

Answers to these and a number of other questions about shoes were sought through a consumer survey of a representative group of about 1,100 men and women in the Philadelphia metropolitan area.

The study was designed to ferret out suggestions for improvements in leather that might make more footwear customers better satisfied.

The researchers focused their attention primarily on consumer reactions and attitudes toward materials used for shoe uppers.

Leather is, of course, the most time-honored of these materials.

But a relatively new class of man-made materials for shoe uppers that, in some ways, closely resembles leather has been developed. These manmade substitutes have made, and continue to make, sizable inroads in the footwear market. The competitive position of leather could hardly be appraised adequately without comparing consumer's attitudes toward the two. (The new synthetic material about which users were questioned was Corfam—solely because it was the first material of its type to be marketed and thus most likely to be known to the most consumers. Use of the trade name does not constitute an endorsement by the USDA.)

A few questions also were asked about canvas and other fabrics and traditional synthetics that have been on the market for some time.

The survey came up with the following findings:

**Leather.** In general, leather uppers got good marks for durability, shining well, and providing good support.

Many of the respondents also indicated leather uppers look good for a long time, fit well, are a good buy, and are easy to care for.

The predominant improvements wanted were better waterproofing, greater flexibility and softness, and more resistance to scuffing.

Many men and women also expressed the wish that leather were easier to care for and didn't have to be polished so often. And a lot of men would welcome a leather that is more resistant to perspiration damage.

*Synthetic leather (Corfam).* The wearers rated this material especially high for ease of care. A large majority also indicated that Corfam shoe uppers look good for a long time and provide good foot support.

Another key point brought out was the Corfam owners' assertions that it has scuff and water resistance—two qualities that people wanted, but often found lacking, in leather. However, some mentioned that Corfam shoes are expensive and have to be fitted carefully.

The majority of owners did not dislike anything about their Corfam shoes. Among those who did, perspiration problems and inflexibility were the main faults found.

As for other types of synthetic materials for shoe uppers, most of the men and women questioned were hard pressed to come up with favorable comments. Low cost appears to be the main appeal. But the impression that these synthetics are "cheap" materials tended to dull the luster of inexpensiveness mentioned as an advantage.

*Canvas or cloth.* Shoe uppers made of these materials were said to be washable, good for sports or leisure wear, lightweight and comfortable. The chief disadvantages volunteered by respondents included nondurability, not enough support, and lack of water resistance.

In the course of the survey, considerable incidental "intelligence" was gathered that might be of use to persons in a position to improve the quality of leather.

People who rated a potential improvement as "very important" also indicated a willingness to spend more money for shoes so improved.

Mothers were most anxious to see more effective scuff and scratch resistance and waterproofing in their children's leather shoes.

Only about 1 woman in 10 said she spent \$16.50 or more for a pair of dress shoes; 4 out of 10 men, however, said they paid the higher prices for dress shoes.

About one-third of all the group owned sports shoes. And a majority of the women owned boots. (20)

## U.S. Tea Drinking Rises In An Instant

"All the tea in China" barely resembles what Americans sip over bridge tables, or Londoners serve up with crumpets.

Almost all tea used in the U.S. and Great Britain is black. China's is green. And since black tea is basically a 19th century innovation, that stuff dumped gleefully into Boston Harbor back in 1773 was green too.

Though usually grown in different locales, black and green tea—the two main types—are dried leaves of the same plant. Black tea, however, goes a step further—it's fermented.

Before reaching American consumers, about 80 percent of the black leaves get broken. But not by accident. Breaking the leaves produces a stronger brew and intensifies the flavor.

While slightly more expensive than the whole leaf type, broken grade tea is nonetheless preferred by the two largest tea-importers—Great Britain and the United States. Continental Europeans, however, generally find their cup of tea made from whole leaves.

Tea totallers report that the average American still drinks less than an eighth of the amount downed by his British counterpart. But tea drinking in the U.S. rose 20 percent per capita over the past decade.

Happily for those legions of

Americans gulping more tea, prices have remained relatively stable. The average price for a package of 48 tea bags was 64 cents in 1970—the same as in 1960.

Though some still like it hot, a "spot of tea" has come to mean a moisture-beaded glass of iced tea more often than not. Aided by the convenience of instant tea—and mixes with added lemon and sweeteners—an estimated two-thirds of our tea is served over ice.

Virtually ignored 20 years ago, instant tea accounted for nearly 40 percent of total tea use in 1970. While the familiar tea bag still corners around half the market, loose tea is gradually being shoved into obscurity. Instant tea's the culprit, but it's also responsible for brisker tea sales.

Americans will probably be sipping even more tea over the next decade, but at a declining rate. And chances are, instant tea (including mixes) will bag almost half the market by 1980. (22)

## Prices and Wages Don't Control Bread Demand

Americans spend about 9 percent of their total food money for bakery products. Once past the eclairs and pecan pies, consumers spend nearly half this amount for just plain bread.

Data on quantities of bread produced and eaten are scarce. And census figures are available only for certain years. Existing data show, however, that demand varies with season, reaching its highest level in the summer months—the "sandwich season."

Overall demand for bread changes very little with fluctuation of prices or income. Prices *do* have a slight impact. For example, if bread prices rose 10 percent, use might drop as much as 3.7 percent. But if personal disposable incomes (earnings after taxes) rose 10 percent, the increase in bread purchases would probably be less than 1 percent (21)

# BRAZIL

*Though Brazil has about half of South America's land and people, its agriculture is not yet making full use of resources at hand.*



Much of Brazil's agriculture is somewhat like the banana tree that grows most everywhere throughout the country.

It has been luxuriant, thriving. Mostly, it has benefitted from favorable, natural conditions—and little from modern technology.

The virility of Brazilian agriculture is summed up compactly in its 4.5-percent average growth rate during the past 20 years. And, since output grew even faster than the highly fertile population, agricultural production per capita rose 1.5 percent yearly.

This is a high batting average in the league of developing nations. For 54 of the developing countries, the agricultural growth rate has averaged only 2.8 percent in the 1950's and 1960's. Per person farm output for the group as a whole barely kept up with the population increase—and did not accomplish this until 1969.

In looking at Brazil's experience, other developing nations may find something to emulate. After all, many of their problems and potentials are quite similar to those of Brazil.

Moreover, Brazil's progress appears to demonstrate that agricultural advances are inevitable sooner or later—unless physical or technological barriers are insurmountable. And agricultural growth, in turn, generally stimulates general economic well-being.

But there's a catch to Brazil's development story.

The rate of agricultural growth peaked at 6 percent in 1967. It slackened in 1968 and 1969. And, despite the total increase in output of farm products, gains in productivity per worker and per unit of land have been small—even prior to 1967.

Brazilians thus continue to be among the "poor" of the world. Their incomes (now around \$250 per

capita yearly) have not improved much during the past couple of decades, either as to level or distribution. And, as in many other countries, the farmer is at the bottom of the financial ladder.

Somehow, Brazil has not yet come up with an equation of factors that will solve its big problem: how to make its land, and those who work it, contribute more toward raising national and per capita income.

With around half the land and half the people of all South America, Brazil is far better endowed than many countries. And up to now, Brazil has relied mainly on its vast land mass and big reservoir of labor to achieve the gains it has made.

In addition, its farmers have shown surprising capacity to come up with "capital" (though largely in the form of traditional inputs). And they have exhibited enough managerial initiative to combine resources productively (again, mainly though not exclusively, in traditional patterns).

Among the negative factors in Brazil's problem, what seem to be the most basic?

*Geographic handicap.* Most of Brazil lies on a vast, rolling plateau—with only one wave of mountain ranges. It runs north and south, fairly close to the coast, and forms a barrier that for over 400 years has helped keep most of the population encamped along the eastern edge of the country.

Moreover, the country's great and navigable rivers have not helped much in opening up the country or bolstering its economy. A large freighter can go at last 2,300 miles up the mighty Amazon—a river that makes the Mississippi look almost narrow. But the Amazon leads to no vital cities.

*The land itself.* Quantity does not necessarily mean quality when it comes to Brazil's soils. True, many areas produce an abundance of coffee, cocoa, cotton, corn, and a wide variety of other crops. But yields in

general tend to be average, or less, among those of Western Hemisphere countries. U.S. wheat and bean yields are more than double those in Brazil, and our corn and cotton yields are three times as large.

Sizable areas of Brazil are enormous swamps and arid wastelands. Cultivable land is relatively low in natural fertility. And much of it does not respond well to known yield-increasing techniques.



*Brazil is bigger than the U.S. "lower 48"*

*Transport.* As recently as 1966, more than one out of 10 Brazilian farm properties were cut off by impassable roads for at least 2 months of the year.

Though considerable progress has been made in constructing a highway network, transport is still a basic problem.

There are about 20,000 miles of railroad tracks, but most of them are short-haul lines that do not penetrate far inland. Since many are of different gauges, rolling stock cannot be used interchangeably.

*Mechanization.* Close to three-fourths of Brazil's farms continue to use only human muscle for power. That this is one of the main constraints on labor productivity has

been recognized, but unresolved, for a century or more.

Most Brazilian farmers simply have not "taken" to mechanization—or in many cases, not even to animal power. For some as yet unexplained reason, profits from use of nonhuman power have been too small to warrant extensive use of work animals or machines.

*Technology.* Here again, few Brazilian farmers have adopted "improved" practices (use of fertilizer, for example).

Unfavorable prices, or nature of the soil and other environmental factors may sharply restrict the transferability of technology from abroad and within areas of Brazil as well.

Plant varieties are a case in point. Brazil has far to go to provide its farmers with sufficient varieties fully adapted to the ecological diversity of its 2,480-mile length and breadth.

Moreover, fundamental problems of tropical agriculture may block effective use of some products or techniques that succeed in temperate climates.

There have, nevertheless, been a number of innovations (notably, introduction of soybeans) that have been accepted and proved highly successful. But Brazil will have to expand its research investment considerably before the potentials of its untapped resources and undeveloped territory can be realized.

Almost certainly, land will contribute more than any other factor toward increasing agricultural output in Brazil during what remains of the 20th century.

Only 30 percent of Brazil's 618 million acres was being used for agriculture in 1960. Most of the land being cropped is in the older, settled States along the coast. Here, the percentage of area in farms ranges as high as 60 to 75 percent. If the same proportion of frontierlands—the vast, hollow spaces in the middle and western portions of the country—could be brought under cultivation, crop area would be trebled. (23)

## Japan's Plans Call For More Rice as Cattle Feed

Burdened by an overly big rice carryover, Japan is strongly encouraging use of rice in mixed feed production.

Feed processors are expected to use 500,000 metric tons of old-crop surplus rice by March 31. And the Japanese government plans to release another 1 million tons of rice to processors for use in feed manufacture during the marketing year ending Oct. 31.

For 1971-72, the Ministry of Agriculture and Forestry in its budget awaiting approval by the Japanese Diet provides for \$1.3 billion to finance rice programs. About two-thirds of this amount would be allocated to the Food Agency's Special Account for Rice Purchases and Resale Operations. The other third (\$425 million) would be used to finance payments to farmers for diversion of land from rice in 1971.

Japan's new policy is based on two premises. One is the assumption that livestock production will continue to expand during the early 1970's. The other is the government's need to reduce its rice carryover—and in doing so, cut down considerably on burdensome storage costs. At the end of October 1970, stocks were a record 7 million tons.

Although feed grain prices were at high levels in 1970, the use of rice in feed processing is not expected to lower price levels in 1971.

The purchase cost of the rice crop by the Japanese government in 1970 ranged from \$306 per metric ton (paddy) to \$421 per metric ton (milled) as compared with \$305 per ton paddy and \$419 per ton milled in 1969. The milled rice price was about three times that estimated for imported milled rice and prices to farmers for government purchased rice averaged roughly \$383 per metric ton (paddy). This price was only slightly above that of the previous year. However, it was the first time that prices were varied in an attempt to encourage production of high quality rice.

Imported feed grains such as corn and milo from the United States were quoted at \$78 and \$72 per metric ton late in 1970, while Canadian and Australian barley were priced at about \$76 per ton.

Historically, Japan has been a large importer of rice, but imports have declined sharply the past 3 years.

In 1965, Japan imported 967,000 metric tons of rice, but by 1970 imports had dwindled to only about 20,000 metric tons. Primary suppliers in 1965 were the United States and Taiwan. Thailand provided practically all the small 1970 imports. Most of these were of the special glutinous variety the Japanese use in pastries, but even this trade will probably be discontinued in 1971.

A new feature of Japan's policy to liquidate stocks is evidenced in exports of rice which began in 1968 with the sale of 377 metric tons. By 1970 Japan's exports of rice were estimated at 600,000 metric tons and are expected to remain at this level in 1971. The leading export outlets in 1970 were the Republic of Korea (307,000 metric tons) and Indonesia (151,000 metric tons).

Japan's own food consumption requirements for rice are now stabilized at about 12.5 million metric tons per year.

Government stocks of old rice at the end of October 1971 will be about 6.5 million metric tons (brown rice). This takes into account the old rice to be fed to livestock and poultry, exports, and decline in home use.

The Ministry of Agriculture and Forestry's 1970 rice production program, with the objective of decreasing rice production by 1.5 million metric tons, was only partially successful. On a brown basis, the production of 12.9 million tons was about 1.1 million tons below 1969. This decline was achieved through a 10 percent reduction in area planted in rice. The government purchased 110,000 hectares of paddy area for public uses and paid \$970 per hectare to farmers for diversification of 240,000 hectares of riceland to other farm uses. (24)

## Egg and Milk Sales Rise Sharply in Korea

South Koreans have increased their spending for eggs and milk, fruit, and seaweed more than for any other foods in recent years.

However, demand for almost all agricultural products has increased rapidly with an expanding population, and a gradual upgrading of diets. Although there is a continuing need for food grains—especially rice, wheat, and millet—in both rural and urban areas, the gaining popularity of nongrain foods is striking.

The uptrend in total use of eggs and milk is the sharpest, at 14.6 percent yearly.

Urban Koreans spend about 10 times as much as their rural compatriots on these two commodities. They spent about \$6.3 million on eggs in 1964, \$12 million in 1968, and an estimated \$17.4 million at the beginning of this year—judging by projections in a *Food Consumption Study* published by the Yonsei University in Seoul.

Fruit consumption is increasing at the rate of 11.4 percent per year: from \$11 million in 1964, to \$20 million in 1968, and an estimated \$29 million by 1971.

Spending for seaweed jumped from \$17 million in 1964 to \$24 million in 1968, and by 1971 was expected to reach \$30.5 million. There are numerous varieties of seaweeds, but two are especially popular—Laver in the cities, and Dulse in rural areas. Both are economical substitutes for vegetables.

According to the *Food Consumption Study* total food expenditures were expected to rise from \$1.4 billion in 1964 to \$2.2 billion by 1971.

The United States continues to be one of Korea's principal trading partners. In 1969 we provided almost one-third of the country's agricultural imports, including over 960 million pounds of rice and 48 million bushels of wheat.

In addition, we furnished about 80 percent of all net economic aid received by the country. (25)

**HOUSEHOLD CONSUMERS' ACCEPTANCE OF EXPERIMENTAL GRAPEFRUIT JUICE CRYSTALS.** Thomas M. Stack, Market Facts, Incorporated, and Evelyn F. Kaitz, Statistical Reporting Service. MRR 910.

This report presents results of a survey to evaluate consumer acceptance of foam-mat dried grapefruit juice crystals and to provide insights into consumers' reactions to crystals made from other citrus fruits. (See November 1970 Farm Index.)

**AGRICULTURAL PRODUCTIVITY IN COLOMBIA.** L. Jay Atkinson, Foreign Development and Trade Division. FAER 66.

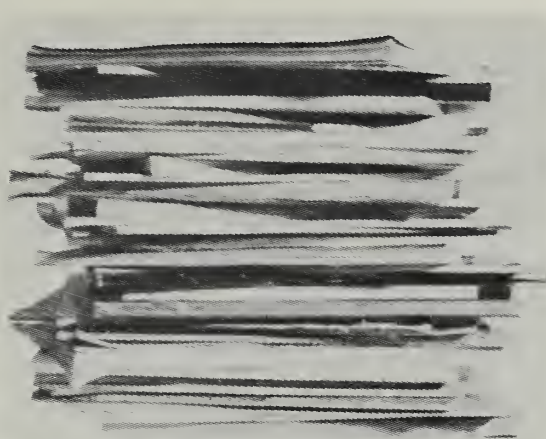
Although agricultural output has expanded less rapidly than nonagricultural production in Colombia since 1950, development of the two sectors appears consistent. Increases in area and yields since 1950 were largest for crops produced with mechanization, especially cotton, rice, and sugarcane.

**AN ECONOMIC ANALYSIS OF PERMISSIBLE IRRIGATION WATER COSTS IN THE TEXAS HIGH PLAINS.** Wyatt L. Harman, William F. Hughes, and J. Rod Martin, FPED. Texas A&M University Agr. Expt. Sta. Departmental Information Report 70-3.\*

An analysis of returns on irrigated farms of the Texas High Plains indicates that the ability to defray water costs over the long run is likely to be somewhat lower than the price paid for water on many farms in 1966.

**CHARACTERISTICS, TRENDS, AND COMPARISONS OF THE DAIRY INDUSTRY IN GEORGIA, THE SOUTH, AND THE UNITED STATES.** Blair J. Smith, University of Georgia. Agr. Expt. Sta. Georgia Research Report 84.\*

Emphasis in this report is on the descriptive aspects of change in the dairy industry for the areas covered by the report. Selective data from the *Census of Agriculture and Dairy Statistics* reports are printed into



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one publication so that observation and comparison of trends are more convenient for the researcher.

**THE IMPACT OF NEW INDUSTRY ON LOCAL GOVERNMENT FINANCES IN FIVE SMALL TOWNS IN KENTUCKY.** Charles B. Garrison, University of Tennessee, in cooperation with the Economic Development Division. AER 191.

New manufacturing plants often cost rural communities more than they return in tax revenues, though the fiscal impact on a new plant is not always uniform among the various units of government affected.

**FARM MORTGAGE LENDING: EXPERIENCE OF 17 LIFE INSURANCE COMPANIES, FEDERAL LAND BANKS, AND FARMERS HOME ADMINISTRATION, JULY-DECEMBER 1969 AND CALENDAR YEAR 1969.** Forest G. Warren and Nan P. Mitchem, Farm Production Economics Division. FML 24.

Total farm-mortgage lending by Farmers Home Administration, Federal Land Banks, and 17 Life Insurance Companies during the last half of 1969 was highlighted by an 18-percent decline from a year earlier in new money loaned.

**PROCEEDINGS OF A SYMPOSIUM: SECONDARY IMPACTS OF PUBLIC INVESTMENT IN NATURAL RESOURCES.** Natural Resource Economics Division. MP 1177.

The symposium's principal objective was to provide a setting where government and university economists could discuss and evaluate the theoretical and practical issues in measuring secondary effects of resource development.

**CATTLE FEEDING IN THE UNITED STATES.** Ronald A. Gustafson and Roy N. Van Arsdall, Farm Production Economics Division. AER 186.

This report makes use of available published reports and statistical data, together with judgments of a number of research analysts concerned with problems and potentials of the cattle industry. (See August 1970 Farm Index.)

**SECTOR INCOME AND EMPLOYMENT MULTIPLIERS: THEIR INTERACTIONS ON THE NATIONAL ECONOMY.** Robert H. Elrod and Preston E. LaFerney, Marketing Economics Division. Tech. Bull. 1421.

In 1967 a workable input-output methodology for generating multipliers for sectors of the national economy was devised. Now a method has been found for breaking out the household sector; it is covered in this report.

**FOOD PRICES: BEFORE AND AFTER DISTRIBUTION OF WELFARE CHECKS. . . LOW-INCOME AREAS, SEVEN CITIES, 1969.** Eileen F. Taylor, Marketing Economics Division, MRR 907-1.

This report provides 115 pages of survey data basic to the study (MRR 907) published earlier under the same title.

**P.L. 480 CONCESSIONAL SALES.** O.H. Goolsby, G.R. Kruer, and C. Santmyer, Foreign Development and Trade Division, FAER 65.

While some objectives of P. L. 480 have changed, certain goals have been retained throughout the program. It has always been a stated objective of P.L. 480 to encourage economic development and to promote in other ways the foreign policy of the United States. Also, throughout the program there has been the humanitarian aim of feeding hungry people around the world.

**PROJECTIONS OF SUPPLY AND DEMAND FOR AGRICULTURAL PRODUCTS IN DENMARK (1970-1980).** Marshall H. Cohen, Foreign Regional Analysis Division. ERS-For. 303.

Supply and demand projections for agricultural products in Denmark show how consumption patterns are

expected to change as incomes and price levels change and as urban areas expand.

**FARM TENURE AND CASH RENTS IN THE UNITED STATES.** Robert D. Reinsel and Bruce Johnson, Farm Production Economics Division. AER 190.

Leasing farms on a cash basis is increasing because, with continued farm expansion, part ownership is on the rise and more part owners are paying cash for the land they rent. Rental is no longer a temporary step to full ownership, but has become an effective and often permanent way to gain control of land resources.

**CONSEQUENCES OF CHANGING PRODUCTION STANDARDS FOR MANUFACTURING GRADE MILK.** Boyd M. Buxton, Farm Production Economics Division, and Jerome W.

Hammond, University of Minnesota. Special Report 37-1970.

Higher production measures recommended by the USDA and the U.S. Public Health Service for manufacturing grade milk cover animal health, water supply, sewage disposal, milkhouse, cooling and cleaning equipment, and animal housing. (See August 1970 Farm Index.)

**FARM REAL ESTATE MARKET DEVELOPMENTS.** Robert D. Reinsel, Farm Production Economics Division. CD 75.

National farmland values rose 4 percent during the year ended March 1, 1970—the smallest rate of advance in 7 years. Real estate reporters indicated the tight credit markets contributed most to the slowdown. Another factor was general uncertainty over future wheat, feed grain, and cotton programs.

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# Economic Trends

Item	Unit or Base Period	'57-'59 Average	1969 Year	Dec.	Oct.	1970 Nov.	Dec.
<b>Prices:</b>							
Prices received by farmers	1910-14 = 100	242	275	284	274	270	265
Crops	1910-14 = 100	223	220	215	229	231	225
Livestock and products	1910-14 = 100	258	323	343	313	304	300
Prices paid, interest, taxes and wage rates	1910-14 = 100	293	373	378	394	395	396
Family living items	1910-14 = 100	286	351	357	369	371	372
Production items	1910-14 = 100	262	304	307	319	319	320
Parity ratio		83	74	75	70	68	67
Wholesale prices, all commodities	1957-59 = 100	—	113.0	115.1	117.8	117.7	117.8
Industrial commodities	1957-59 = 100	—	112.7	114.6	118.3	118.3	118.7
Farm products	1957-59 = 100	—	108.5	111.7	107.5	106.7	106.8
Processed foods and feeds	1957-59 = 100	—	111.8	122.6	124.9	124.8	123.6
Consumer price index, all items	1957-59 = 100	—	127.7	131.3	137.4	137.8	138.5
Food	1957-59 = 100	—	125.5	129.9	133.0	132.4	132.8
<b>Farm Food Market Basket: <sup>1</sup></b>							
Retail cost	Dollars	983	1,174	1,216	1,221	1,209	1,213
Farm value	Dollars	388	478	499	459	448	437
Farm-retail spread	Dollars	595	696	717	762	761	776
Farmers' share of retail cost	Percent	39	41	41	38	37	36
<b>Farm Income: <sup>2</sup></b>							
Volume of farm marketings	1967 = 100	<sup>3</sup>	102	120	144	136	117
Cash receipts from farm marketings	Million dollars	42,693	47,229	4,544	5,595	5,079	4,200
Crops	Million dollars	18,434	18,790	2,129	2,864	2,782	2,000
Livestock and products	Million dollars	24,259	28,439	2,415	2,731	2,297	2,200
Realized gross income <sup>4</sup>	Billion dollars	—	54.6	55.2	—	—	55.8
Farm production expenses <sup>4</sup>	Billion dollars	—	38.4	39.0	—	—	40.9
Realized net income <sup>4</sup>	Billion dollars	—	16.2	16.2	—	—	14.9
<b>Agricultural Trade:</b>							
Agricultural exports	Million dollars	4,105	5,936	590	724	720	739
Agricultural imports	Million dollars	3,977	4,958	481	470	435	509
<b>Land Values:</b>							
Average value per acre	1967 = 100	—	<sup>6</sup> 115	<sup>6</sup> 115	<sup>7</sup> 118	<sup>7</sup> 118	<sup>7</sup> 118
Total value of farm real estate	Billion dollars	—	<sup>6</sup> 207.3	<sup>6</sup> 207.3	<sup>7</sup> 210.7	<sup>7</sup> 210.7	<sup>7</sup> 210.7
<b>Gross National Product: <sup>4</sup></b>							
Consumption	Billion dollars	294.2	577.5	592.6	—	—	627.6
Investment	Billion dollars	68.0	139.8	140.2	—	—	137.5
Government expenditures	Billion dollars	92.4	212.2	216.3	—	—	223.2
Net exports	Billion dollars	2.7	1.9	2.6	—	—	2.7
<b>Income and Spending: <sup>5</sup></b>							
Personal income, annual rate	Billion dollars	365.3	748.9	774.3	809.9	812.6	817.8
Total retail sales, monthly rate	Million dollars	17,105	29,303	29,419	30,534	30,173	—
Retail sales of food group, monthly rate	Million dollars	4,160	6,322	6,436	6,859	6,853	—
<b>Employment and Wages: <sup>5</sup></b>							
Total civilian employment	Millions	63.9	77.9	78.7	78.7	78.5	78.5
Agricultural	Millions	5.7	3.6	3.4	3.3	3.3	3.4
Rate of unemployment	Percent	5.5	3.5	3.5	5.6	5.8	6.0
Workweek in manufacturing	Hours	39.8	40.6	40.7	39.4	39.6	39.7
Hourly earnings in manufacturing, unadjusted	Dollars	2.12	3.19	3.29	3.37	3.39	3.46
<b>Industrial Production: <sup>5</sup></b>							
	1957-59 = 100	—	173	171	162	163	162
<b>Manufacturers' Shipments and Inventories: <sup>5</sup></b>							
Total shipments, monthly rate	Million dollars	28,745	54,726	55,540	54,936	54,301	—
Total inventories, book value end of month	Million dollars	51,549	95,931	95,931	99,466	100,043	—
Total new orders, monthly rate	Million dollars	28,365	54,933	55,138	54,190	54,573	—

<sup>1</sup> Average annual quantities of farm food products purchased by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1959-61—estimated monthly. <sup>2</sup> Annual and quarterly data are on 50-State basis. <sup>3</sup> 1967 Average. <sup>4</sup> Annual rates seasonally adjusted third quarter. <sup>5</sup> Seasonally adjusted. <sup>6</sup> As of November 1, 1969. <sup>7</sup> As of November 1, 1970.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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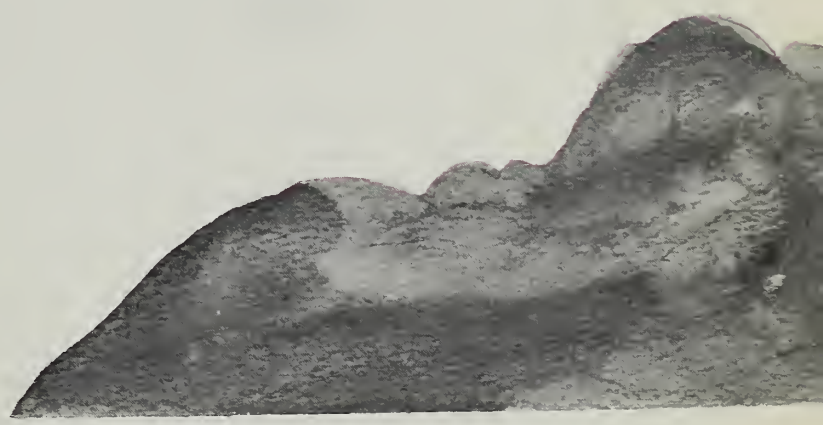
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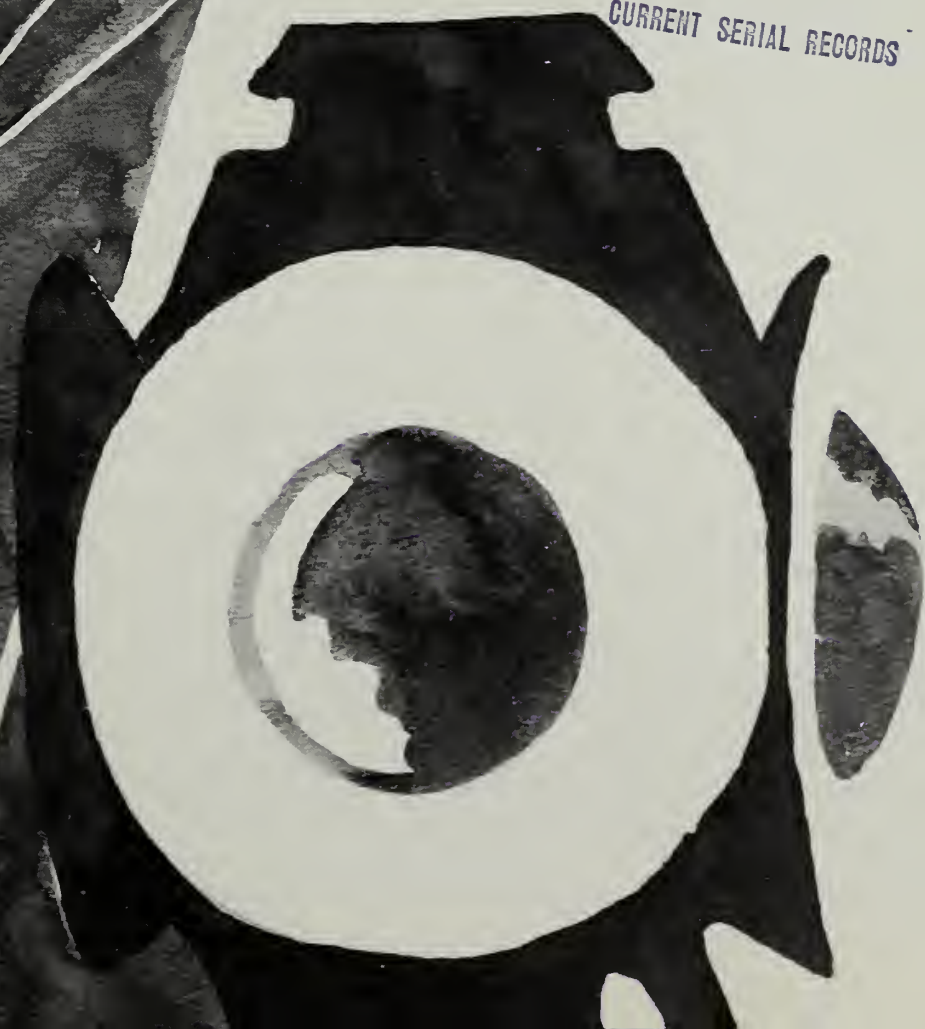
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CURRENT SERIAL RECORDS



As the first quarter, 1971, draws to a close, economists have a better idea how the record will read for the year as a whole. They also stress that this year's outlook contains more "ifs" than usual. A big one is the **Southern corn leaf blight**. Will it strike again in '71?

The situation, as outlined by one speaker at the 49th Annual Agricultural Outlook Conference held in Washington, D.C. this past February:

The fungus can withstand very low temperatures. Tests in many States show it is still "fully viable in debris on the soil surface," especially in Florida where viable wind-blown spores are now being collected. And normal wind currents blow from the Southeast up the Mississippi Valley, providing a vehicle for the northward movement of spores. The weather in 1970 was good for corn yields—as well as for blight infection. Equally favorable conditions in '71 could set the stage for a recurrence.

However, a higher percentage of blight-resistant hybrid seed will be sown this year in the South. Also, spores of the blight thrive under wet conditions; by the time the corn emerges, the spores could be rendered ineffective after the onset of dry weather. Fungus in infected debris must undergo 6-8 infection cycles before spores multiply to the point where they can cause an epidemic.

"Unfortunately," concluded George Sprague, a prominent USDA corn researcher, "both arguments involve a considerable degree of uncertainty and speculation."

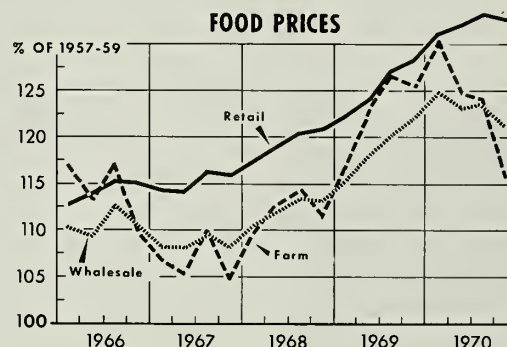
**Food expenditures** in '71 won't match last year's 8½-percent rate of growth because of bigger food supplies combined with some slowdown in the rise in retail food prices. A 5-percent gain in total spending seems reasonable assuming consumers' after-tax incomes go up about 7 percent.

**Retail food prices** will be under less pressure this year, again due to larger food supplies plus the prospect of smaller increases in margins for processing and marketing. The rate of price increase may average only half of last year's 5½ percent.

Prices will rise through the first 3

quarters because of seasonal factors and some inflationary pressures still evident in the economy. In the fourth quarter, prices are expected to level off, but still will be higher than a year earlier. Grocery store prices may rise only 1-2 percent for the year, compared with 4 percent in '70. Eating-out prices will continue upward but at less than the 7½-percent increase of last year.

The effect of inflation on food prices vis-a-vis farm prices is shown by the trend lines in this chart. The "farm food prices" are those received for food originating on U.S. farms, in other words, the farm value.



Between the end of 1968 and the first quarter of 1970, farm prices increased 17 percent. Prices dropped just as fast during the rest of '70 and the fourth quarter average was nearly the same as in early '69. Marketing margins meanwhile advanced at an unusually rapid clip.

The reason had to do with higher wages and costs of other goods and services bought by marketing firms. Inflation in marketing charges in this period more than offset the effect of bigger food supplies that caused farm prices to decline. It's also apparent that productivity in marketing over the past few years has risen less than the increases in earnings of employees, which advanced 6 percent in 1969-70.

**Gross farm income** in 1971 will grow by about \$1 billion from last year's \$56.2 billion, with most of the increase coming from crop receipts. Realized net farm income, however, will trail 1970's \$15.8 billion, reflecting the persistent rise in farm expenses. Realized net income per farm will probably be about the same as in 1970.

**Farm production expenses** may go up around \$1.5 billion—about 4 percent above the \$40.4 billion of 1970. Major items in the breakdown—

**Purchased feed.** Feed grain prices to remain near current levels through midyear. Changes in the last half hinge on the yet uncertain prospects for feed grain production. Overall price increase for current season is estimated about 15 percent above the 1969/70 average.

**Feeder livestock.** For feeder pigs, little change expected through spring, but prices should strengthen this fall if hog numbers decline as anticipated. For feeder cattle, look for the usual seasonal rise in spring prices, although this year the increase will probably be tempered by a bigger supply, higher feed costs, and recent lower returns to cattle feeders.

**Hired farm labor.** Wage rates seen higher in '71, assuming continued inflation, keen competition for skilled employees, and further unionization of farm workers. Average composite wage rate was \$1.42/hour in 1970, up 9 cents from '69.

**Fertilizer.** Estimated 10-12 percent above the '70 levels, due to steepening production costs incurred by manufacturers.

**Interest rates.** Somewhat lower on operating loans, but softening of wholesale rates may take time to show up in rates charged to farmers. By mid-1971, in many areas the decline will amount to 1 percentage point, although it's unlikely rates will fall to pre-1968 levels. Money for farm mortgages will be in greater supply this year, and interest rates may drop ½ to 1 point by mid-summer.

**Supplies** of major field crops—feed grains, wheat, soybeans, and cotton—have been drawn down, and prices in the 1970/71 marketing year may average 5-7 percent above a year earlier. Supplies of food crops—such as citrus, fresh vegetables, and potatoes—are larger this year. The freezes in early '71 damaged certain citrus and vegetables, but prospective output of fresh vegetables is still above a year ago and citrus is up more than a tenth. Prices for fresh food crops are therefore averaging under the 1970 levels. For pro-

# Contents

cessed vegetables, prices throughout the summer are expected to hold generally firm to strong for most items.

**Livestock production** will average higher—perhaps 2½-3 percent—and livestock product prices a bit lower. Output will continue larger for eggs, and milk, and for turkeys at least into late 1971. For beef, cattle on feed and indicated marketings point to little change in the first half compared with a year earlier. Hog production is expected to taper off in the latter part of this year, as indicated by farrowing plans for spring pig crops. Broiler output in the first half of '71 will be moderately smaller than last year.

**Stocks** of at least four commodities—or commodity groups—are expected to fall to the lowest levels of recent years.

**Cotton:** Year-end supplies for the current August-July marketing year will represent the smallest carryover since 1952—around 4½ million bales, down a little over 1 million from last summer.

**Wheat:** With a total disappearance about 1.6 billion bushels—as seems likely—the June 30 carryover may be sharply below the 885 million of June 1970, or around 700 million bushels and the smallest carryover since 1968. The decline itself is the biggest since 1963/64.

**Feed grains:** Carryover into 1971/72 (year begins in October for sorghum and corn, and July for oats and barley) will be the smallest since the mid-1950's.

**Soybeans:** Usage this marketing year (September-August) will exceed production for the second consecutive year. By September next, the carryover will be equal to hardly a month's operating level for processors.

**Farm product exports** in 1970/71 (July-June) will run well above \$7 billion—a new record. It compares with \$6.6 billion in 1969/70. Wheat exports, reflecting Europe's poor wheat crop and tighter feed grain supplies, may be one-fourth higher than last year's 606 million bushels. But feed grain exports are projected 5-10 percent below the 21.2 million tons of 1969/70.

## FARM

## RURAL

## MARKETING

## CONSUMER

## FOREIGN

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Contents of this magazine may be reprinted without permission. They are based on research of the Economic Research Service and on studies done in cooperation with State agricultural experiment stations. Use of funds for printing this publication approved by Director of the Bureau of Budget, May 24, 1967. Subscription price: \$2 yearly (\$2.50 foreign). Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.20402.

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The Farm Index is published monthly by the Economic Research Service, U.S. Department of Agriculture, April 1971. Vol. X. No. 4

# Farming the Forest



**E**nough wood was used in the United States in '69 to build a 104,000 mile-boardwalk 1 foot thick and 24 feet wide: a boardwalk that would reach nearly halfway to the moon.

By the year 2000, we may be using so much wood that our hypothetical promenade could extend all the way from Cape Kennedy to the lunar hills of Fra Mauro.

Cuttings from "little forests" or woodlands on American farms provided close to half of the Nation's 1969 wood supplies, and swelled farm family coffers by about \$238 million. (This was money earned only on holdings that produce enough crops or livestock to meet Census criteria for a "farm.")

Of course, wood is not measured by a mile. So in more prosaic terms, it now takes over 13.2 billion cubic feet of wood yearly to meet our needs—saw logs and veneer, pulpwood and poles, piling and toothpicks, flooring and fences, railroad ties and picnic tables, and hundreds of other wood products.

These products are worth over \$1 billion on the stump. For an idea of

their final value, multiply this by 25, because an average of \$24 is added to every dollar of stumpage by the time a product gets to the final user.

Demand for most forest products seems destined to grow rapidly.

Fuelwood is one of the few probable exceptions. Its usage has been whittled to a splinter of that in bygone days. Even so, total U.S. demand for wood products 30 years from now is projected to be nearly  $2\frac{1}{2}$  times that of today.

Can our diminishing endowment of trees grow fast enough and big enough to keep up with the needs of our burgeoning population?

Many economists and foresters say that attainment of this goal depends in large part on America's farmers, since they hold so much wooded area.

About one-third of all our U.S. land is classified as forest land: 760 million acres. Not all of this is really "timber" land. Some is wild—a mix of trees, brush, or range. Some is rock-surfaced above the timberline. Some has been set aside solely for public uses, such as national parks or wildlife reserves.

Public lands account for 44 percent of our total forest land. About 9 percent is held by the forest industry (enterprises deriving their main income therefrom).

*The biggest part—47 percent—belongs to farmers and miscellaneous private landowners with relatively small holdings.*

Altogether our forest lands offer a bounty of goods and services. They may not include commercially valuable timber, but certainly an abundance of open space, water, wildlife, and esthetic and recreational opportunities. Also, about 250 million acres of forest land are grazed by domestic livestock.

About 510 million acres are deemed capable of yielding industrial wood crops. In the North and South, about three-fourths of these lands are owned by small private owners—many of them farmers; in the West, about one-fifth.

Over half the \$238-million farm sales of forest products in 1969 were made by southern farmers.

"Woodlots" on North Carolina farms brought in \$30.4 million; in Georgia, \$26 million (more than the value of cotton, about the same as pecan crops, and twice peach sales); in Alabama, \$13.4 million; and in Mississippi, \$15 million.

More generally speaking, what can a farmer expect in financial returns from his forest holding?

An increase in land value is one thing he might expect from developments of the past decade. The \$30 to \$40 per acre base value of woodland has jumped into three figures over a short time span.

Timber values have sharply accelerated over the same period. And it is sales of timber that will give the farmer-with-forest the most profit. How much, of course, will depend on where he lives, his markets, the quality of his timber stand, amount of growing stock etc.

In parts of the western Rocky Mountain area, a farmer may be

hard pressed to even find a market for his timber. He'll often be lucky to just break even and cover such out-of-pocket costs as taxes.

In Maine, on the other hand, roadside returns have traditionally run between \$7.00 to \$11.50 per acre in 1970 dollars (including stumpage and the landowner's labor).

In Arkansas, on good pine growing lands, a net yearly return of \$15 to \$20 per acre is possible under intensive management. A good coastal Douglas fir farm woodlot, on a good site and in its prime growing years, may earn as much as \$50 per acre a year.

Wherever he might be, a farmer would be fairly lucky to have a 40-acre piney woods on good soil with a good stand (an above-average situation). The owner's capital investment, time, and effort on this small woodlot should net \$600. With little or no financial or management inputs, he can let nature take its course and probably net \$200 or \$300 annually from the 40 acres.

If the landowner has 400 acres or 4,000 acres of timber on his farm, personal and financial incentives would then tempt him to turn his back on his crops and livestock—and perhaps abdicate the title of “farmer”.

Timber, of course, is only one forest product. Many others, lesser known, can also give the woodland owner some supplementary farm income. Such products range from pine mulch and fireplace logs to medicinal barks and edible berries—not to mention Christmas trees and homecrafted wood novelties.

Less tangible, with profits less predictable, are potentials stemming from public pressure for private wooded “playgrounds”: campsites, fee-fishing spots, nature trails or hunting grounds. (In the hill country of Texas, for example, hunting leases now bring around \$1 a year per acre, or \$150 per gun, for complete hunting privileges.)

From both economic and social aspects the woodland horizon is broad and should be bright for the 4 mil-

### ***Farm-Forest Services***

Do you have a “little forest” or patch of woods on your farm? Would you like some help in making better, more profitable use of it?

Here are some experts who can probably assist you or direct you to a close source of help.

—National Forest Ranger (located in any national park or forest.)

—State government: Service Forester, District Forester, Extension Forester, Soils Conservationist, Utilization and Marketing Specialist, and Rural Area Development Committee.

—County Agent or County Forester.

—Forestry schools (at State colleges or universities).

In addition, there are at least 70 available government publications. For a list, write to the Superintendent of Documents, Washington, D.C. 20402, and ask for *Price List 43* (it's free), *October 1970, Forestry: Managing and Using Forest and Range Land . . . Including Timber and Lumber, Ranges, and Grazing, American Woods. (2)*

lion individuals who own various parts of it.

Trouble is, if you are an average farmer you may not have the know-how or monetary incentive to manage your “little forest” the way you do your crops and livestock.

Your returns from your woodlot are therefore relatively small. Moreover, average yearly growth per acre of your trees isn't anywhere near what it could be. You are not adding as much as you might to the Nation's needed wood supplies, nor to your own wallet either.

You *can* in many cases do something about it. For instance:

- Inventory your woodland resources . . . types of trees . . . wildlife . . . flora . . . water assets.

- Improve your timber stand. Plant genetically improved stock . . . thin . . . fertilize . . . prevent fires . . . control pests and disease.

- Case the market. Determine the needs of local industries. Plan ahead. Time cuts to take advantage of markets offering the best price. Investi-

gate possibilities for hard-to-market species, sizes, and grades of forest products.

- Harvest efficiently and judiciously. Measure the volume of your harvest as carefully as you figure the “quick” profits. Consider the savings if you can do your own harvesting, using your farm equipment.

Management and marketing information and services are available, often free, from a number of sources. Your State-employed forester is probably one of the best for on-the-spot help.

Meanwhile, the U.S. Department of Agriculture has responded to a recent Presidential directive by developing a national incentives program to help the private forest landowner.

Pilot loans, cost-sharing, and other special incentives are all a part of the proposals. They have three main goals: to upgrade the quality and quantity of timber harvested from nonindustrial forest lands; to enhance the Nation's environment; and to recompense the private woodland owner for benefits the public receives. (1)

## **Dairy Chores Lighter In Lake States**

Larger but fewer dairy herds. Less and less labor to do dairy chores. These trends in the Lake States—Michigan, Minnesota, and Wisconsin—are expected to be even more pronounced by 1980 than today.

University of Minnesota economists, in cooperation with the Economic Research Service, have projected future labor needs for the Lake States' dairy industry. Here's the way they see the situation 10 years from now:

—The number of dairy herds is expected to drop to about 76,000 from about 148,000 in 1967.

—Herds of less than 30 cows will be a rarity.

—Herds of 30 to 49 cows will remain the predominant size group.

—Herds with 50 or more cows will double in number.

—Only about 76,000 farm operators and their families will be involved in dairy production (73,000 fewer than in 1967.)

—Total dairy chore labor will be reduced by 33 percent or about 53,000 man equivalents (160,000 man equivalents were used in 1967).

—Labor per cow per year will decrease to 80 hours in 1980 (it was 95 hours in 1967).

Even with all these changes, 1980 milk production in the Lake States is expected to be about the same as now—around 33 billion pounds. (3)

## **“Backgrounding” Gains In Colorado**

Contract cattle feeding is catching on with Colorado ranchers.

The practice has also spread to western Oklahoma and into the High Plains of Texas, where oilmen's spare cash has been invested in contract farming.

In what's known as “backgrounding,” Colorado ranchers and owners of large fattening feedlots contract with cattle feeders to have their calves and yearlings fed to a weight of 700–800 pounds—or to be fed for a specified period.

The cattle are then ready for a finishing ration. And, they are accustomed to life in a feedlot.

(Cattle put into the feedlot direct from the range, sometimes lose weight while getting acclimated. Obviously, it takes time—and costs money—to recover this weight.)

Backgrounding feedlots are big. Many carry over 5,000 head at a time. They custom feed as well as background. And they are new—average length of operation is just over 3 years. One-third to two-thirds of the animals fed in 1969/70 were steers.

In contrast to backgrounding, ranchers with breeding operations may contract to “winter” their heifers in feedlots, so the cattle will be hardier and heavier at breeding time

in the spring months ahead.

Other ranchers, instead of selling weaners in the fall, have their calves custom fed in feedlots through the winter, then either sell them as short yearlings or turn them out on grass for the summer.

Animals that are wintered are primarily steer calves weighing under 500 pounds. Cost of gain and miscellaneous expenses may run 22 cents a pound.

The capacities of winter feedlots in Colorado range from 250 to 8,000 head, compared with the capacity of standard feedlots of 20,000 head or more.

Tremendous expansion in Colorado feedlots started 5 or 6 years ago. They attracted corporate investors, and many ceased being family enterprises.

This year, grain prices and other costs of cattle feeding have jumped, and the big expansion has leveled off for the time being. Feeder cattle have been upgraded; their price has jumped too.

However, demand is steady, so contract cattle feeding will probably remain a farming option. (4)

## **Foggy Weather Wins Heart Of Fussy Artichoke**

Anybody can try to grow artichokes, but chances are he won't succeed. Among other exacting requirements, this crop needs a climate that's cool, yet frost-free, with plenty of foggy days.

One place artichokes do proliferate is a five-county coastal area south of San Francisco, Calif. Ninety-nine percent of the U.S. artichoke crop comes from there. In fact, the “Artichoke Capital of the World” is now Castroville, in Monterey County.

The artichoke came to California from Europe in the late 1800's. The leading commercial variety, Green Globe, is recognized by its deep green heads of fleshy, pointed leaves with an oily “heart” at the center. The thistle, or “choke”, is what surrounds the heart.

Artichoke production reached a peak of 73 million pounds in 1967. Last year's harvest was 671 million pounds (valued at \$7 million) from 11,000 acres.

U.S. consumption of fresh artichokes is around .3 (three-tenths) pound per person—50 percent more than it was during the 1950's. (5)

## **South and West Emerging Strong in Egg Picture**

As recently as the 1950's the Midwest was considered the hub of the U.S. egg industry. It was also the only major area with egg surpluses. But no longer.

Now, the South and Far West have gained in egg production and are a big part of the picture. They supply most of the table eggs for deficit areas in the Mountain States and the Northeast—markets whose deficits were formerly filled mainly by Midwestern producers.

Not only has the Midwest lost ground in its traditional markets, but lately other producing regions—particularly the South—have been shipping eggs into the Midwest proper.

Egg production during the 1960's declined in six of the eight Midwestern States. Indiana and Michigan were the exceptions.

Despite the Midwest's plentiful feed supplies, this competitive advantage has been partly eroded by inefficiencies in the local feed milling and chick hatching industries.

A predominance of small, scattered flocks—resulting in high assembling and packing costs—has further weakened the Midwest's position in going after the business in egg-deficit areas.

Besides the loss of egg markets, production decreases may also reflect farmers' lagging interest in this line of agriculture.

Output of the Midwest's major crops went up substantially during the 1960's. And among the poultry enterprises, turkeys have been regarded as a more profitable alterna-

tive to layer chickens or broilers.

This situation could well change in the decade ahead. But for the time being—and considering all factors—the South and West appear to enjoy a competitive advantage over the Midwest in egg production and marketing.

In the Western region roughly three-fourths of the egg production comes from California. It is also far and away the biggest egg State in the country, with 1969 cash receipts of \$238 million.

California's advantages stem from its many large flocks, highly integrated operations, and efficiencies in milling and poultry hatching. Also, contract marketing is widespread.

All of which add up to savings in production and marketing costs. Production costs in California are among the Nation's lowest. Despite some disadvantages in having to import major feed ingredients, the advantages of buying in volume have helped keep feed costs down.

In the South, Georgia is the top egg producer and second in the Nation (1969 cash receipts of \$214 million). North Carolina is third (\$127 million).

The southern egg industry has followed the pattern set by the broiler industry—founded on contract production and vertical integration. The notable difference is that in the egg industry large owner-integrated operations developed simultaneously with contract production.

As in California, higher costs of some feedstuffs have been partly offset by purchasing in volume, concessions on freight rates, and improvements in the milling and hatching industries.

Other factors in the rise of southern egg advances include the availability of low-cost labor, and a need for new agricultural industries at a time when output of the region's major crops has been stabilizing or declining.

The four principal egg-producing States in the Northeast—Pennsylvania, New York, Maine, and Con-

necticut—maintained or expanded their production during the sixties. But the Northeast's share of U.S. output has declined.

Feed costs and wage rates are higher than in other regions. Marketing costs, however, are lower, because of shorter distances to market and the use of more direct marketing channels. (6)

## As Farms Grow, Custom-Hire Jobs Wane

As farms become larger and more specialized it generally makes economic sense for them to own most, if not all, of the equipment they need to handle mechanical operations.

The trend toward farm expansion in New York State has reduced the use of custom hire operations. Increased opportunities to lease and to rent farm machinery have also had an adverse affect upon the market of the custom hire operator. During the 1960's, machine hire expenses accounted for less than 2 percent of total farm expenditures in New York State.

As the market for custom hire operations decreases, it appears that an increasing percentage of the custom work is being done either by farmers attempting to make more efficient use of their farm equipment, or by co-ops and firms that sell a service along with their product for an additional fee.

Nonetheless, machine custom hiring does play a useful role in New York agriculture. Many firms still find that for specific jobs it is more economical to hire the work than to invest in the necessary machinery to do the job themselves. Furthermore, as new machines are developed, custom operations often serve to introduce the equipment and pave the way for its general use.

To help meet a growing demand for information about current custom rates being charged in New York, high school vocational agricultural teachers and county extension agents interviewed over 160 men in 40 counties who had performed

custom jobs during 1960 and 1970.

The rates charged in 1969-70 generally varied with working conditions. The rates reported here are considered "typical."

The survey showed that charges for practically all of the common custom jobs have gone up since 1963. But with the development of larger and more efficient equipment, the elimination of many inefficient sized fields, and a relatively tight market for custom hire operations, the increases in custom rates have not kept pace with general increases in price rises.

Among the custom hire operations most frequently used by New York farmers are fertilizer application, plowing, corn planting, combining, field chopping and silo filling. Bulldozing and backhoeing are also often done on a custom hire basis.

In the grape industry the use of custom machine operations has increased. Development of the mechanical grape harvester during the late 1960's has opened a field for custom operations that did not previously exist.

Custom weed spraying was one of the most common jobs reported. A typical rate, excluding material costs, ran about \$2.50 an acre, but the cost of spraying grapes was \$9 an acre.

If the farmer wanted to spray from the air he could pay \$2.50 an acre for the standard airplane service or \$3 an acre for a helicopter application.

The typical charge for plowing was \$7 an acre; for corn planting, \$4 an acre; and for grain drilling, \$3 an acre.

Corn could be dried for 15 cents a bushel or \$5 a ton. Drying small grains cost an average of 5 to 9 cents a bushel or as much as \$7 a ton. The same service for beans ran about 30 cents per hundred-weight.

Charges for hay mowing averaged about \$6 an hour. Mow, crush, and swath services cost the farmer about \$5 an acre.

Most custom operators charged \$30 a ton for harvesting grapes. (7)



ENVIRONMENT:

## Using the Land

*Though our land resources appear adequate to provide ample food supply for many years to come, a strong case can be made for wise planning of the way land is used.*

About 1½ million acres have been dropping out of our cropland base each year.

During the 1945-64 period, 54 million acres were abandoned or shifted to noncrop uses. But for every 2 acres that went out, about 1 acre of new cropland was developed. So, on balance the annual reduction came to roughly 1.4 million acres.

However, the land drain is not as bad as it looks. Much of the new land is more productive than that abandoned.

Overall, production increases per acre since the 1940's have more than offset the shrinkage in farmland.

Most significant, the production gains have been outstripping our population's growth rate, currently around 1 percent a year. Population during 1950-70 expanded one-third . . . crop production by over one-half . . . and the per capita agricultural output by 6 percent.

Right now about one-fifth of the Nation's land area is used for crops, or roughly 430 million acres. Another 640 million consists of grassland pasture and rangeland, al-

though some of this has very low carrying capacity for livestock.

But what about next year, and the next 25 or 50 years?

"In the judgement of competent authorities," said Agriculture Secretary Clifford M. Hardin, "the United States has the land, and the ability, to satisfy the food requirements of a population perhaps double the size of today's, provided we plan the use of the land wisely.

"A crucial question arises, however, and policy makers must keep it constantly in mind. It is this: In planning for greater economic, urban and industrial growth, how do we preserve our better farmlands for future needs and at the same time assure adequate land areas for other open space uses?"

Looking at recent trends in land use, it's apparent that urbanization favors the use of the better farmland. Also, a fair-sized chunk of the better quality land is located in those counties within Standard Metropolitan Statistical Areas (SMSA's)—the ones in or nearby a city or community with at least 50,000 people.

In 1964, by the latest data available, the SMSA's had some 17 percent of total farm numbers, and 14 percent of the harvested cropland. The SMSA's also contained about 15 percent of the better land, i.e., of Land Use Capability Classes I, II, and III.

The annual conversion of land to urban uses is around 420,000 acres on the average. Most of this is former cropland, and much of it, probably of Classes I-III. Nationwide estimates have not been made, but a study of urbanization in 98 northeastern counties showed that about 80 percent of the converted land fell into this category.

In the 1950's and most of the 1960's, it was population pressure and high incomes—coupled with readily available mortgage money—that led to large shifts of rural land to urban use. Financing difficulties reduced the level of urban expansion in the late sixties.

How much farmland that urbanization will swallow in the seventies

is anybody's guess. But urban uses per se are only one part of this story. A variety of other uses also compete for rural land—

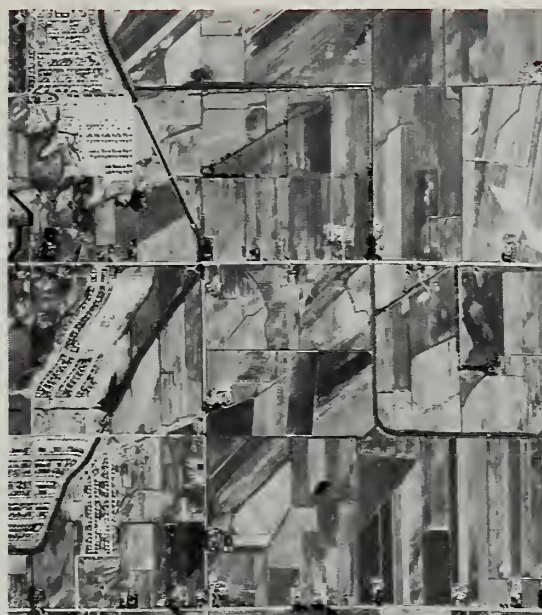
*Highways and airports.* The Interstate Highway System begun in the 1950s' will be completed by the mid-1970's, so the conversion of land to highways may have reached a temporary zenith. Land takeover for airports has increased, but the acres involved are relatively small. Together, highways and airports outside urban areas use some 160,000 acres of new land each year.

*Recreation.* This has been taking ever-increasing quantities of land. Sales of boats, sleeping bags, and tents, have gone up phenomenally in recent years. Travel trailer sales rose tenfold between 1956 and 1966. An estimated 2 million families now own cottages, cabins, and second homes. Over 30 million acres are in national and State parks. Expansion of recreational areas and wildlife refuges in the next decade may involve considerable acreages, but much of this will have only limited direct public use and little of it will come from cropland.

Overall—recreational and wildlife and wilderness uses do not seriously compete with agriculture for land. Most of the land taken for such uses has terrain or drainage features making it unadapted to agriculture. Some competition occurs when wetlands having an exotic ecology or serving as habitat for waterfowl, are drained for agricultural use.

*Water control.* Reservoirs claim about 420,000 new acres each year. The amount has been going up with population.

*Surface mining.* It takes a sizeable bite and leaves ugly scars. Each year the disturbance comes to something over 150,000 new acres, most for excavation or pits and waste or spoil disposal. The rest is taken by mine access roads and exploration activities. As of last year, the total came



Urbanization of this farmland near Idaho Falls, Idaho, shows a typical development pattern for high-value irrigated cropland. Settlement is dense, and the land is kept in production until actually converted to urban use. At left, in 1951; right, 1966.

to over 4 million acres. However, about a million acres of this can be recovered by regrading and revegetation.

The immediate future will probably see an expansion of surface mining because of the rapid demand for electrical power, slow progress in developing nuclear power, increasing costs of deep mining operations, and shifts to low-sulfur coal to minimize air pollution. Also, exports of coal, particularly to Japan, have been picking up in recent years.

*Federal facilities and national defense installations.* For the most part, the acreage has declined slightly since World War II with the disposal of small amounts of surplus acreage. This decline is continuing as military installations are closed for economy reasons; but the acreage is small, and many of the facilities are within the limits of urban areas.

Abandonment and shifts to other uses occurred largely in the States south and east of the Corn Belt, excluding the Delta and southern Florida. Cropland has been converted to grass or forest or abandoned, mainly because of low fertility and features of the terrain not adapted to efficient use of modern machinery.

While all this was happening, ag-

riculture since the mid-1940's picked up an average of well over a million acres a year. The new cropland showed up in several well-defined areas.

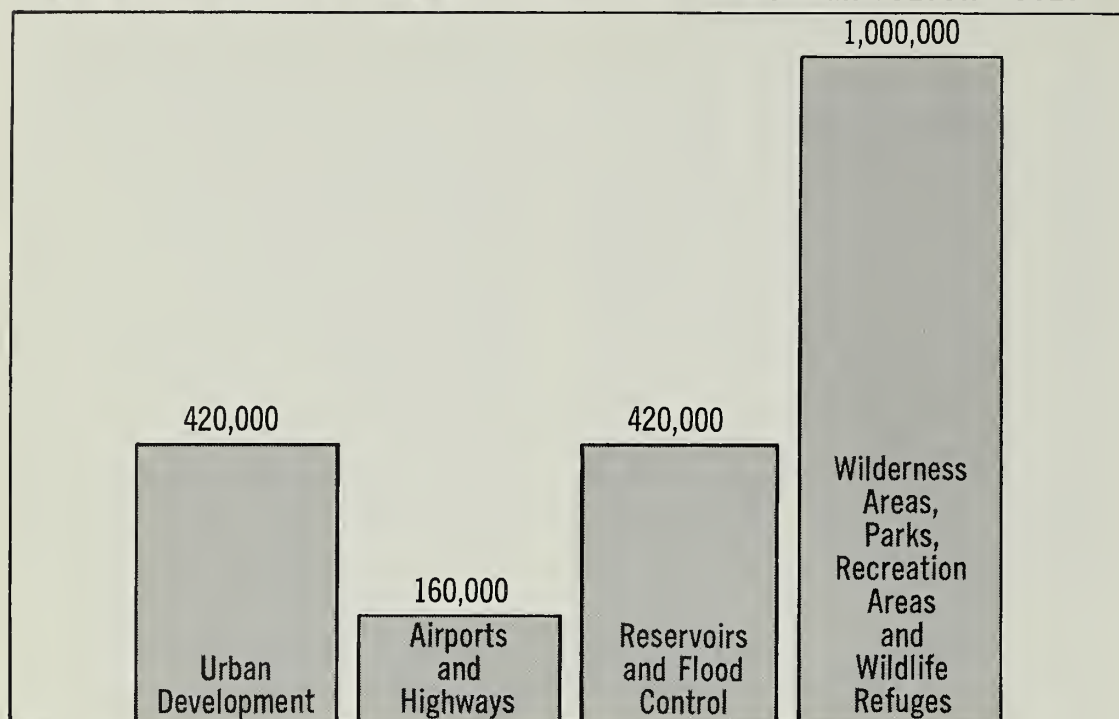
Reclamation in Florida was associated largely with combination drainage-irrigation projects, in the Delta with drainage and clearing and in the Texas High Plains, California, and Washington with expanded irrigation facilities. Expansion in northern Montana was owing to improved dryland farming techniques, and throughout the Corn Belt to small-scale drainage, clearing, leveling, and conversion of pasture to cropland. Most of this "new" cropland is more productive than that abandoned.

Though our land resources appear adequate to provide ample food supply for many years to come, certain developments would alter the outlook.

For one, the past increases in per-acre yields are attributed to a number of factors—improved varieties, higher use of fertilizer and pesticides, the elimination of less productive land from cropping, and land improvement practices such as drainage and irrigation.

The economists do not have at hand the information necessary to assign to each of these factors its contribution to overall growth in

## 2 MILLION ACRES A YEAR ARE CONVERTED TO NONAGRICULTURE USES



output. However, this much is evident: Future per-acre production gains of, say, 2 percent per year would depend to a considerable degree on continuing increases in uses of farm chemicals on land. If it becomes necessary to curtail usage of chemicals, per-acre yields would be less, and more land would be required to achieve a given level of production.

On the livestock side, questions are being raised about how much beef demand will increase and whether pasture and rangeland would be sufficient to carry all the cattle needed.

Although the trend has been toward greater consumption of grain concentrates in mixed feed rations, demand for beef has been growing even faster than the utilization of grain concentrates. Thus, greater amounts of roughage from pastureland will be required.

One possibility for filling the bigger needs for roughage is to use for pasture the land retired from crop production. Much of this land has higher carrying capacity—if properly developed—than rangeland and pasture now used for grazing. According to projections of the Water Resources Council, the area in permanent pasture could increase to 649 million acres (48 States) from

the 640 million of 1964.

The long-range picture for exports also harbors uncertainties. The acreage equivalent used to produce export commodities has varied widely over the past 20 years, from a low of 31 million acres in 1953 to a high of 77 million in 1963.

Barring sharp increases in exports, there will be sufficient land resources to accommodate them. But exports are difficult to project because of the unpredictable changes in the import and export policies of the world's trading nations, and in the unforeseeable changes in the technologies used by the developing countries.

The evidence to date indicates that much of the land is *not* being used wisely. The same can be said for other exhaustible resources—such as the water bodies needed by wildlife and for recreational uses. Sometimes, the abuses to the land can be rectified:

On a busy summer weekend 10,000 tourists pass through the town of Woodruff, Wisconsin, population 900. Few stop to see Snake Lake. "Snake Lake is an eyesore," said the conservationists. "Nuisance blooms of algae and duckweed appears throughout the summer. Oxygen depletion has killed most of the fish."

Snake Lake is changing, however. The concerned citizens of Woodruff, working with the University of Wisconsin's Extension Service and the Upper Great Lakes Regional Commission, demolished the old sewage plant that caused the lake to become polluted. Then they pumped the lake of its water, filtered out the contaminants through sandy soil in a nearby field, and the lake is now being replenished with crystal-clear water.

Asked why he was involved in this project, one Snake Lake resident replied: "Well, in the interest of conservation. Here's a lake that has good possibilities of being salvaged or reclaimed. And I have time now that I'm retired, so I saw an opportunity to put something back in the kitty, so to speak."

This kind of local initiative, if carried out to the length and breadth of our 50 States, might soon bring an end to the "environmental crisis."

It is also true that Snake Lake encompasses a mere 14 acres, by contrast to the millions of square miles being paved by the Nation's highways and housing complexes. Unlike Snake Lake, much of this vast area cannot be readily recovered, if at all.

[This is the second in a series of articles on the environment. "Who Pays for What?" will be featured in the next issue.] (8)

## Rural Areas Brace For Energy Hunt

If the Bureau of Mines has correctly read the future, the Nation's needs for energy will more than double by the year 2000. Rural America will know that it's happening.

Many of the new power facilities will be erected well outside the congested cities and suburbs. Rural areas will also be called upon to provide much of the increased fuel sources to be required.

In the mid-1930's, the U.S. used 20 quadrillion Btu's a year. The usage is now up to 60 quadrillion, and is expected to soar to over 160 quadrillion by 2000. (One quadrillion Btu's

—or British thermal units—is the energy equivalent of 965 billion cubic feet of gas, 175 million barrels of oil, or 38 million tons of coal.)

Coal currently accounts for about 20 percent of the Btu's consumed, natural gas and petroleum 75 percent, and hydroelectric power under 5 percent. While the needs for each of these will double in 30 years, the Bureau of Mines projects a 300-fold increase for nuclear power, which now provides only a fraction of 1 percent.

No matter what the source of the fuel, there will be some adverse effects on the environment. Production of coal and uranium tears up the land. In the process of mining the coal, sulfuric acid is produced. In extracting petroleum, brine comes to the land's surface. The acid and brine then re-enter surrounding water courses. Hydro facilities also modify river regimens.

When using coal or petroleum as a fuel supply, power plants expel gaseous wastes into the air. Air pollution is not a problem with nuclear plants, but they produce radioactive waste materials. Natural gas produces little air pollution. However, all four types of fuels produce surplus heat in the process of generating electricity.

The usual practice is to dissipate the heat using neighboring water bodies. And when water temperatures are raised, lower forms of aquatic life may suffer as a consequence. Reproductive processes of certain fish are also affected.

Overall, the energy outlook carries three major implications for rural areas. First, surface mining of coal is bound to increase. By 1965 about 1.3 million acres had already been disturbed, 532,000 being in the North Central States. Acreages there will probably swell substantially, creating additional environmental problems and a need for effective reclamation.

Second, more electric generating plants will be built in rural America in an effort to diffuse chemical and thermal pollution of air and water.

From 237 in 1968, the number of large plants (500 megawatts and up) is projected for the Nation at 492 by 1990. Some 60 percent of these would be using fossil fuel and 40 percent, nuclear. One hundred of the 225 new sites would have facilities of 2,000 megawatts or larger.

Finally, location of large generating plants away from urban concentrations will also mean more, and probably larger, transmission lines transecting the countryside. Most people don't like living near these power structures, although the reasons given are various.

### *The Look of Our Land*

Words can tell the story of how our land is used—but not with the detail and precision of a picture.

With this in mind, the Economic Research Service is publishing a five-volume series of air photos for people who are concerned with the present and future uses of U.S. land.

*The Look of Our Land: An Airphoto Atlas of the Rural United States* includes aerial photographic mosaics and stereo-pairs for the 156 land resource areas in the 48 contiguous States.

Two volumes—subtitled *The Far West* and *North Central* have been issued. Other areas planned for study are the Mountain and Desert Region; Plains and Prairies Region; and East and South Region.

Maps, text, and airphotos combine to show the ways our land is used, according to an established regional and area classification. The area shown in a stereo-pair seems three-dimensional when viewed through a simple pocket stereoscope.

Copies of *The Look of Our Land: An Airphoto Atlas of the Rural United States*—*The Far West* are available only from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20402, for 60c. Single copies of the second volume, subtitled *North Central*, AH-384, are available free from Publications Distribution, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. Larger orders may be bought from GPO for 75¢. (2)

One way or another, measures will be taken to avoid an energy crisis. Meantime, more rural land will probably be disturbed. And controversies will heat up over the future locations of generating plants and the routing of transmission lines. (9)

### **“Combos” Play Key Role In Drawing Resort Crowds**

The resort that offers the most attractive “recreation package,” is likely to lure the most clients when summer rolls around.

But how does a resort operator figure out the combination that is likely to be most popular?

If he happens to be in Wisconsin, he can get some guidance from a survey of recreational activities engaged in by 843 vacationing groups—mostly families. Ninety resort operators cooperated in the survey.

Altogether, the vacationers indulged in some 28 different recreational activities—ranging from water-skiing and golf to rock-hunting and nightlife.

But over 83 percent of the groups covered in the survey were primarily interested in only three activities.

Fishing accounted for nearly half of all first choices expressed by the vacationers. The preference was especially heavy in northern areas, while swimming and loafing were relatively more popular at southern resorts. These three activities accounted for 83 percent of all first choices.

To come up with a potentially best-selling package of four activities, the researchers considered 346 different combinations.

For guests at northern resorts, a single package containing fishing-swimming-boating-loafing would appear to satisfy the desires of the greatest number of guests. An alternative combination would be swimming-boating-sightseeing-hiking.

At southern resorts, a package offering swimming-sightseeing-boating-loafing would probably pull in the most customers. (11)

# The Big Switch in Farm Freight

*Railroads' freight revenues are coasting downhill as mounting loads of raw farm products leave the tracks and travel by truck.*

Railroads traditionally have played a major role in moving raw farm products to mills, packing plants, canneries, and marketplaces. But as a source of revenue for our Nations' rail system, unprocessed farm products are declining in importance.

Although today's trains haul more tonnage of farm commodities than 15 or 20 years ago, volume increases haven't kept pace with growth in agricultural production. Consequently,

substantial shares of this traffic—particularly in products subject to higher freight rates—have been lost to other forms of transportation, primarily to trucks.

And, as railroads have lowered freight charges for most agricultural commodities, shipments of unprocessed farm products have provided a steadily decreasing share of total freight revenue—down from 13 percent in 1954 to less than 10 percent now. In actual dollars, revenue dropped \$135 million.

Data from 1954 through 1969 indicate that railroads fared reasonably well in competing with other transportation systems for traffic in semiperishables. These include—a-

mong other relatively durable commodities—grains, soybeans, cotton, and tobacco.

Grains made up the bulk of semiperishable shipments, accounting for over 6 percent of all train traffic over the 16-year period.

While rail transport of tobacco dropped by around half, grain sorghum and soybeans about doubled in freight tonnage.

The combined increase in rail shipments of semiperishables came to over 20 percent, but it produced less than a 3-percent hike in total freight income.

Gains in semiperishable freight have been partially offset, however, by sharply decreased traffic in per-



## Bakers Get Big Slice Of Bread's Price Rise

The retail price of a 1-pound loaf of white bread rose more than a penny last year to an average of 24.2 cents.

This was the biggest annual price increase since 1951, but the rate of advance—a little over 5 percent—was about the same as the general upswing in retail food prices.

A more expensive loaf of bread was the result of widening marketing spreads—the price to shoppers less the farm value, or returns to farmers. The retail share of the marketing spread jumped 8 percent, whereas the baking-wholesaling share rose almost 5 percent.

In actual dollars, however, the bakers' and wholesalers' portion of the spread expanded more than the retailers', and accounted for half the rise in bread prices.

The farm value of all ingredients in a pound of bread averaged close to 3½ cents last year. Despite mounting retail prices, the farm value has remained fairly stable, ranging between 3.3 and 3.6 cents over the past 5 years. (15)

## Better Days Ahead For Cotton?

As the 1970/71 cotton picture takes shape, there's a lot in it that augurs well for the industry. Utilization prospects, in particular, look better than they did a year or two ago, despite reduced supplies.

Part of the encouraging news is that the outlook for U.S. cotton exports is improving.

While foreign Free World shipments are expected to decline slightly in 1970/71, U.S. exports may gain sharply—possibly accounting for about one-fifth of total trade, up from 17 percent in 1969/70. During August-December, U.S. exports totaled 967,400 bales, 28 percent above the first 5 months of the previous year. Shipments are expected

switch is in distance traveled. Though perishables tended to travel farther, the average train ride for most unprocessed farm products is greater than 2 decades ago. Citrus products and potatoes now average 200 additional miles per trip.

Again, changes in market structure have played a part. Grain hauls have become longer because of a trend for feedlots to locate away from major grain producing regions. Bigger exports of farm products have boosted the average distance too, as more foreign-bound freight travels from farm to port.

But more important, the rise in *average* mileage indicates that trucks are absorbing a substantial share of the short haul market.

It's not possible to determine how much rail traffic has been switched to trucks, or to compare volumes of agricultural traffic hauled by each system. Trucks, unlike railroads, are not subject to Federal regulations governing routing and rates for interstate shipments of unprocessed farm products. Statistics are therefore unavailable.

However, some indication of the big switch is given by estimates of total ton-miles of intercity freight carried by trains and trucks. Over the past 25 years, total intercity freight (farm and nonfarm) shipped by rail increased only 30 percent. But trucks nearly quadrupled their volume. Undoubtedly, a substantial share of trucking's gain was in unprocessed agricultural commodities.

The transfer from train to truck can be attributed to several factors, but it's basically a matter of flexibility and convenience. The lack of the same stringent operating regulations affecting trains allows truckers more freedom in setting competitive rates, and in contracting for agricultural shipments.

Trucks can make any number of pickups and deliveries with the same load of farm products. And firms without rail facilities at their doorsteps often find it simpler to ship entirely by truck. (12)

ishables—livestock and nearly all classes of fresh fruits and vegetables.

Losses in perishables have this added significance for rail revenues: perishables usually require special handling—such as temperature-controlled cars—and bring railroads a higher rate per ton than nonperishables.

From the mid-1950's to the late 1960's, rail shipments of livestock declined around four-fifths, apples by about half, and citrus products a third. Lettuce and onions, by contrast, showed substantial gains.

The combined volume of all perishable rail freight fell 40 percent. Revenues, meantime, were off almost 30 percent.

Before writing these off as total losses to other forms of transportation—trucks, primarily—two other developments should be considered.

First is the accelerated use of trailers on flatcars. Under this system, a truck trailer with a mixed load of vegetables can be placed on a flatbed railroad car in North Carolina, and hauled overnight to New York. In the morning, the trailer would be removed from the train, hitched to a trucking company cab, and driven to New York customers.

Statistics on traffic of this type aren't available, so it's not possible to gauge just how much rail freight in perishables has declined.

The second development to be considered is the changing structure of the food industry as a whole. As meat packing plants or canneries shift from big cities to points of production, the demand declines for transportation of unprocessed agricultural products and picks up for the processed items. Thus, the drop in livestock hauls was partially offset by increased rail shipments of meat and meat products.

Another significant farm freight

to exceed year-earlier levels during the balance of 1970/71.

Other encouraging developments for cotton—

The daily rate of mill consumption has increased slightly in recent months. Use in December came to almost 31,000 bales (seasonally adjusted rate), somewhat above the previous month and the year-earlier level. The ratio of inventories to unfilled orders for cotton cloth—normally a reliable short-term indicator of future cotton use—dropped to a 3-year low in November as orders picked up.

In general, cotton has been doing better in recent months in competing with manmades. There are even indications that the losses to manmades, which slowed last year, will be halted in 1970/71. Cotton's market share since 1969 has been holding constant at around 40 percent, despite a slight drop in total cotton usage.

And, the output capacity of man-made fibers—cotton's strongest com-

petitor in the textile market—may increase at a slower rate over the next couple of years.

True, the expansion in manmades' producing capacity will continue at a rapid clip . . . by an estimated average annual rate of about 9 percent during 1971-72. However, this rate of increase is somewhat less than had been projected earlier for 1970-71 by the Textile Economics Bureau.

The Bureau, a private trade organization, now projects total capacity to reach 8.5 billion pounds by November 1972. This level was to have been attained by November 1971, according to the Bureau's previous survey of producers' intentions.

Factors in the curtailment of plans for expansion include the slowdown in economic activity, higher textile imports, and competition from other fibers.

Most of the bigger capacity will be used to produce non-cellulosic fibers, the ones having a chemical base.

The outlook is mixed for manmade staple fibers, some of which compete directly with cotton. Non-cellulosic capacity may increase moderately, while capacity for rayon and acetate may be up only slightly.

*Significantly*, the capacity for polyester staple is projected one-fourth greater. This would be on about half the expansion rate of recent years. Polyester goes to make many of the permanent press textiles and is a formidable competitor with cotton in the shirt and bedsheet market.

The cotton carryover this summer will be down to around 4½ million bales, reflecting larger disappearance, especially exports. This would be the smallest carryover since the summer of 1952, when less than 3 million bales were on hand.

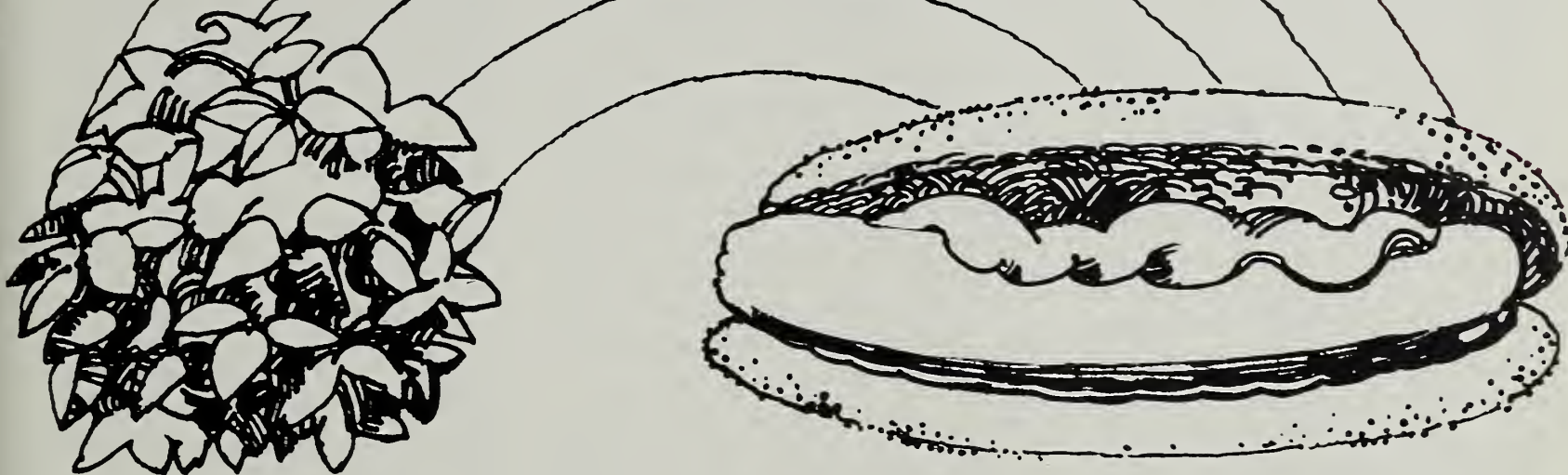
The small increase in the 1970 crop—262,000 bales—is more than offset by a ¾ million bale-decline in beginning stocks. So, the cotton supply of around 16 million bales is almost ½ million below 1969/71 and the smallest since 1947. (13)

### MANMADE FIBER PRODUCERS CURTAIL PLANS TO EXPAND CAPACITY

Fiber	Output Capacity			Percentage Change		Average annual rates of Changes planned for—	
	November 1968	November 1970	Projected Nov. 1972	1968-70	1970-72	1970 and 1971 as of Nov. 1969	1971 and 1972 as of Nov. 1970
	<i>Million pounds</i>			<i>Percent</i>			
Rayon and acetate							
Yarn	876	854	823	—2.5	—3.6	1.5	—1.8
Staple	839	859	904	2.1	5.2	3.8	2.6
Total	1,715	1,713	1,727	—0.1	0.8	2.7	0.4
Noncellulosic							
Yarn	1,998	2,440	3,143	22.1	28.8	13.9	13.5
Staple	1,810	2,378	2,864	31.4	20.4	14.6	9.7
Polyster	951	1,370	1,695	44.1	23.7	17.8	11.2
Other	859	1,008	1,169	17.3	16.0	10.6	7.7
Total	3,808	4,818	6,007	26.5	24.7	14.2	11.7
Textile glass	516	657	742	27.3	12.9	15.8	6.3
Man-made Fibers							
Yarn	3,390	3,951	4,708	16.5	19.2	11.4	9.2
Staple	2,649	3,237	3,768	22.2	16.4	11.7	7.9
Total	6,039	7,188	8,476	19.0	17.9	11.5	8.6

Source: Textile Economics Bureau

## Soybeans in the Plant Protein Spectrum



Meat, eggs, and dairy products are the best sources of proteins for people. By "best" we mean that they come closest to offering a perfect balance of proteins that the body can readily utilize. The best sources of *plant* proteins are from soybeans, nuts, dry beans, and peas.

Soybeans stand out from the others. In a study of a group of selected protein foods, soybeans were found to be the least-cost source of any protein. The cost of proteins from soybean flour—measured in NPU's, or the net amount of protein the body can use—turned out to be roughly one-tenth the cost of proteins from beef, pork, or fish, and one-sixth that of chicken, eggs, and milk.

The table on page 16 shows relative prices of utilizable proteins. From the data, it is obvious why today's decision-makers in institutional kitchens are interested in substituting soy, whey, and skim milk wherever possible for the more expensive animal proteins. If—as the table shows—utilizable proteins from soy flour cost \$.31 per pound and utilizable proteins from beef cost \$3.26 per pound, there would be a strong incen-

tive to use soy flour in cases where the two products are interchangeable. For example, an institutional cook may prepare a meatloaf of 80 percent ground beef and 20 percent soy grits. Its taste would be almost indistinguishable from an all-beef meatloaf.

In comparing net protein costs from several foods, it cannot be concluded that proteins derived from meat are less desirable than proteins derived from plants. For one thing, the net protein values in the table assume that the proteins within these foods will be used to build body tissue. Not all proteins, however, are used for this purpose. Some are oxidized, or converted into carbohydrates or fat for storage. They still get used, even though they perform a less valuable function than the tissue builders.

Furthermore, meats and other animal-derived foods have functions other than providing proteins. Meats, being high in fat, are a good source of energy. Meats and other animal foods also provide vitamins and minerals. Finally, animal products provide a high level of palatability and eating satisfaction. Thus, the figures

in the table point out relative protein costs among several foods and ignore their other attributes.

The economic advantages of using soy protein will become increasingly important, assuming the taste and texture of soy products are improved upon to gain wider consumer acceptance.

Right now animal products are the main source of protein in this country—providing two-thirds of the protein intake. Prices of animal products make it difficult for families with very low incomes to purchase adequate supplies of protein from this source.

Red meats, and beef in particular, have had steady price increases which, if they continue, will make red meats even higher priced than now, relative to proteins from plants. Other meats, such as poultry, have had smaller price increases, and thus may become an expanding source of high quality animal protein.

At the present rate of increase in the Nation's population, the total protein requirement may grow about 10 percent by 1980. There seems little doubt about our ability to meet the bigger protein needs. The crucial

question gets back to which proteins we will use, i.e., the product mix. This will depend on relative prices of the various products, our tastes and preferences, and on the regulations governing the labels, standards, etc. Consumers will have the final say so in determining what the protein sources will be. Many users will be looking for alternatives and the least cost sources of protein.

Protein source	Food price, wholesale	Cost of net utilization protein*
Dollars per lb.		
Beef .....	.49	3.26
Chicken .....	.33	2.47
Fish .....	.45	3.07
Whey (dry) .....	.09	.84
Milk (whole) ....	.07	2.34
Skim milk (dry) .	.22	.79
Eggs .....	.25	2.09
Dry beans .....	.07	.65
Soybean flour ....	.08	.31
Wheat flour .....	.07	3.10
Cottonseed flour ..	.13	.58
Rice .....	.09	1.71

\* Proportion of nitrogen intake retained by the human body. The prices given are considerably lower than retail prices would be for comparable items.

SOURCE: *Composition of Foods*, Agricultural Handbook No. 8, USDA, and *Amino Acid Content of Food and Biological Data on Proteins*, FAO Nutritional Studies Report No. 24, FAO, Rome, 1970.

Will the alternative proteins be available?

Biochemists have yet to discover a plant protein that can totally replace animal proteins, although soy proteins come very close. Soy proteins are slightly lacking in methionine and lysine. Most animal products, however, contain "complete proteins," i.e. they have a complete assortment of the essential amino acids the body needs for tissue building. Of the animal sources, gelatin is one protein that does not meet these specifications—it is lacking in several amino acids. Unless the full array of essential amino acids is present when the protein is metabolized, the protein gets used for energy purposes—rather than tissue building—and its value then is the same as a carbohydrate.

But the quality of plant protein—which lacks one or the other essential aminos—can be readily improved by adding small amounts of animal protein. Thus, plant and animal protein combinations as cereal and milk, macaroni and cheese, egg and bread, and beans and frankfurters provide a better balanced protein than if the plant protein foods were eaten separately at different meals.

Some of the current research on soy protein is based on the concept that soy products can enhance and extend the proteins from other plant sources. Because they are low in price, they also are mixed with meat items. For these uses, they are called extenders. Many of these not only add proteins (at lower cost), they also have functional properties.

In some forms, soy proteins absorb two or three times their own weight of water and their ability to retain moisture makes them desired by bakers who want freshness in their products. Their use in doughnut mixes keeps the batter from absorbing too much fat. In pancake mixes they keep batter from sticking to the griddle. In bread and cake flours, soy flour raises the protein level.

In certain other products processors use soy proteins as emulsifiers. In comminuted meats (as sausages, hot dogs, luncheon meats, hamburgers, meatloaves, meat balls, pizza sausages, and sloppy joes) they reduce shrinkage, provide needed binding, and retain fat and natural meat juices. Soy grits act as a foam stabilizer in brewing beer.

There are also soy products on the market that are intended to be direct substitutes for other protein foods. One type is made to look and taste like real bacon, chicken, turkey, pork, beef, ham, or fish. These new food items now are being produced by seven firms, and other companies are gearing up for market tests in the future. (See Farm Index, October 1970: Bacon Analog Gets a Trial.)

Besides textured items, the major types of defatted soy proteins are flour and grits, concentrates, and isolates. All four forms come from

clean, dehulled, soybean flakes but differ from each other in their protein content, physical and chemical properties, applications, and prices. Nutritionally valuable, they are comparable with meat in amino acids although lower in methionine and lysine.

CSM (corn/soy/mix) blends corn and soybean flours with skim milk powder. It has been available for several years. As of late 1969, it had been shipped to over 100 developing countries. An advantage is its low cost (8 cents per pound to the Government), and it can be used as an ingredient in soup, bread, or pudding. As a beverage, all it needs is addition of water.

Certain technical problems with soy products still seek solution, and the researchers are looking into them. For example, soy flour and grits characteristically have a bitter-beany taste. Soy flour has an unpleasant mouth feel. They cause flatulence (digestive gases) in humans. Removal of the carbohydrates, as is done for the concentrates and isolates, helps in all three of these problems, but some flavor problems remain.

Assuming these shortcomings will be corrected in the near future, there are still other obstacles to widespread commercial use of some of the soy products: the profusion of rules and regulations governing their introduction into the food industry. These regulations are now being reviewed for possible changes. (16)

## Coffee Urns Displaced By Soft Drink Dispensers

The day of the 15-cent cup of coffee is almost upon us, and in some parts of the country it has already dawned.

A few restaurants—mostly at-work places in metropolitan areas—still offer a 10-cent cup of java. That was about the average price, nationwide, 20 years ago. But by 1970 it was up to 13 cents and is expected to rise further this year. Consequently,

as the coffee prices have gone up, the average U.S. citizen has tended to use less coffee.

Per capita use in 1970 dropped to a little under 13½ pounds (green bean basis). This was a 5-percent drop from 1969 and almost 30 percent below peak consumption in the late 1940's.

The general downtrend in coffee drinking (both instant and regular) actually set in about 1962, whereas the biggest part of the price increase has been since 1967.

Price alone, therefore, does not appear to account for all the coffee beans that haven't been used.

For one thing, a pound of beans makes more cups of coffee than it used to. This increased yield has been due to a combination of factors: use of concentrated, instant coffee; larger imports of less expensive, strong-flavored beans (Robusta); and a seeming tendency of waiters and hostesses to serve weaker coffee.

This leads to the question of quality—a touchy subject in the U.S. coffee industry.

Some people in the trade do link decline in coffee demand to a slip in quality. Others say that coffee quality overall is about as good as always. They relate the downtrend in its use to the uptrend in soft drink and iced tea consumption by the increasing proportion of young people (15–24) in our population.

Soft drink prices rose much more than coffee prices last year, but sales continued to climb.

Retail prices of cola drinks last year were up more than 5 percent from 1969. Carbonated fruit drinks went up nearly 10 percent.

Even so, consumers refreshed themselves to the amount of 22.1 gallons per person during the year—3 percent more than a year earlier. This increase, however, wasn't quite as much as it had been the year before—perhaps because of the ban on cyclamates. Per capita consumption of low-calorie soft drinks, at 1.8 gallons in 1970, was only half the level of 1969. (17)

## The Powerful Rise Of Garlic

"A tossed salad without garlic is like a wedding without flowers," a dietitian once observed. An increasing number of Americans apparently share this view. Garlic's use in 1969 was estimated at half a pound per person, against a third in 1966.

And California, the leading domestic supplier, produced about 73 million pounds last year—double the 1966 crop.

The powerful rise of garlic is partly the result of our recent fascination with gourmet cooking, and the growing popularity of pizza and other highly seasoned foods.

Actually, garlic has been around for a long time. A native of western Asia and the Mediterranean area, it's been cultivated for centuries. The Egyptians found it equally useful for cooking and embalming. And the Romans, convinced of its magical

and medicinal qualities, felt that regular garlic rations made their soldiers more courageous.

In India, according to one English writer, garlic has had enduring use for "improving the voice, intellect, and complexion, promoting the union of fractured bones, and helping to cure all the ills that flesh is heir to."

Garlic was most likely brought by the Spanish to the New World, where, the story goes, it was a smash hit with the Indians.

Americans today find garlic on their grocery shelves year 'round—in a variety of forms. For those who don't care to crush their own, there's a choice of several processed products. These include garlic salt, juice, and instant granulated garlic.

Five times stronger than the raw product, the granulated form is nothing more than pure ripe garlic that's been dehydrated and crystallized. Most of the processing is done in modern California plants located near the growing fields. (18)

## Food Costs To Rise After Late '70 Decline

Retail food costs per household in October-December 1970 showed the first quarterly decline in 3 years, slipping \$20 from the previous 3 months to an annual average of \$1,214.

Meanwhile, the returns to farmers (farm value) for market basket foods fell to an annual rate of \$448—or 7 percent less than in the third quarter of 1970. Decreases were sharpest for meat animals (primarily hogs) poultry, eggs, and fresh fruits and vegetables.

Only part of the drop in farm value was reflected in lower retail food costs because of widening marketing margins. The marketing spread—retail costs minus the farm value of the market basket—rose almost 2 percent over the previous quarter to an average of \$766.

Changes in market basket totals in the final quarter of 1970 were

considerably different from those for the entire year. Steeper retail prices pushed up the retail cost of the market basket \$51, or 4.4 percent in 1970 over the preceding year.

Though returns to farmers fluctuated considerably, the average for the year was only \$2 greater than in 1969.

Pressured by rising operating costs within the food marketing system, the marketing spread increased 7 percent, or \$49. Employee earnings jumped sharply, and prices of containers, packaging, and other services were substantially higher.

This year, consumers can expect their market basket of farm foods to cost a little more than in '70. Widening marketing spreads likely will more than offset anticipated lower returns to farmers.

The rise in retail prices, mainly projected for the second half of this year, will hinge primarily on the movement in farm prices and how much marketing spreads widen. (14)

# India

In the early 1950's, shortly after severing ties with Britain, India launched the most ambitious program of land reform yet attempted by a less developed country.

No other land reform program has been of such large scale—involving an estimated 50 million agricultural holdings.

In another sense land reform in India was regarded as a monumental undertaking: Over a short span of years, the program intended to dismantle a system of land tenure that had gone relatively unchanged for centuries. And it was to be accomplished through democratic procedures.

The separate Indian states began by passing laws to abolish the "intermediaries," persons whose job it was to collect rents and taxes from tenants.

But in practice, the intermediaries acted as virtual proprietors of the land they were paid to watch over. Tenants' rights became subordinated to landlords' rights.

Under the reforms to do away with the intermediaries, for the first time tenants were able to deal directly with the states.

Other legislation sought to control landlord-tenant relations, including rent controls. Rents were to be assessed on a fairer basis. Tenants also had the option to buy land.

Other enactments set limits on the size of holding a cultivator could own. Anything in excess of these ceilings was to be reclaimed by the various states and distributed to landless farmers and others.

A more equitable distribution of land was the primary goal of land reform from the outset, and continues to be under the present 5-year plan for India's development.

Reason for this emphasis is fairly obvious. Both unemployment and underemployment are severe problems for India's immense work force of 100 million people. Agriculture being

*LAND REFORM was a monumental undertaking. No other country has tried a land reform program that involves so many agricultural holdings on so large a scale.*



the mainstay of the economy, the farm sector is seen the most likely place to create jobs for a population growing at the rate of some 12 million a year.

However, by one survey of land use in 1949/50, 70 percent of India's 808 million acres were already being used for agriculture. A study in the 1960's showed half of the area was in crops—the highest proportion of any country.

Plainly, the opportunities for bringing more land into production for use by the millions of persons yet unborn, are indeed limited. One alternative is to put the available land to better and more equitable use . . . to allow more people to farm it through a redistribution of holdings.

Now, after almost 2 decades of the land reform program, the results are emerging. They have been disappointing in some respects, and not everything the first 5-Year Plan (1951–56) had envisioned.

Was it because the measures were not implemented swiftly enough? Partly so, although it's also true the reforms were effected by democratic process. As such, a slow pace of implementation is to be expected. A case can also be made that perhaps Indian officials set their sights too high, expected more than a land reform program could possibly achieve in so short a time.

As to the primary objective—land redistribution—by 1967/68 over 100,000 families had settled on some 385,000 acres that had been reclaimed by the Indian states.

Still to be allocated as of 1968 were almost 3 million acres. These would provide  $6\frac{1}{16}$  acre tracts for about 400,000 additional families.

Three million former renters have become owners of nearly 9 million acres, owing to the provisions encouraging tenants to buy the land they rent. For many of those who still rent, the rates have been reduced.

The number of intermediaries has been reduced, if they have not been eliminated entirely.

The work force in agriculture in

### *New Foods In India*

In urban India, the winds of change in eating habits point distinctively in the direction of non-traditional foods.

Food grains still make up over 70 percent of the country's food supply. But this proportion is declining, as more people add potatoes, fresh vegetables and bananas to their basic diet of cereals and pulses. The consumption of packaged foods—like biscuits, breakfast cereals, bottled soft drinks and beverage concentrates—is also increasingly rapidly among the more than 100 million urbanites.

The most striking changes are in the diets of people living in the wealthier neighborhoods of the largest cities. There, the new foods range from chicken meat and eggs to ice cream and processed fruits and vegetables.

Restaurant sales of sandwiches are expanding so fast that bread bakeries have a hard time keeping up with the demand. Sales of sandwich bread have been rising about 30 percent annually. In Delhi and some other cities, ice cream sales have doubled every year since 1967.

The larger the city, the greater have been the changes in the diet, with the exception of some of the newer industrial cities where per capita income is relatively high. Industrial workers in Bombay, for example, earn over \$1 per day—or triple the average earnings on farms or in service trades in villages.

The vast rural population still has a low per capita use of non-traditional foods and beverages. However, with extra income from sales of the new high yielding varieties of wheat and rice, more farmers are going to the cities to shop. While there, they may for the first time attend a cinema, buy popcorn, biscuits and soft drinks. (20)

1951–61 grew by 30 million to 130 million persons—without a rise in unemployment. Agriculture meanwhile provided jobs for about 70 percent of the national work force.

The living conditions of farm workers as a whole improved. Villages have been given a decisive role in maintaining land records, finding

lands for displaced tenants and finding settlers for lands to be redistributed, and in efforts to reclaim wastelands for various agricultural uses.

In a 1969 review of the reform programs of the various states, the Prime Minister of India urged, among other things, that small farmers be guaranteed a fair share of fertilizer, seed, and irrigation facilities . . . and that the ceiling provision on holdings be more effectively enforced than in the past.

The Fourth 5-Year Plan (1971–76) calls for vigorous implementation of land reform laws already on the books. Further reforms are needed, however, in the procedures for taxing landholders, in the system of land records, and in the types of controls on land use and urban settlement. (19)

### **Prices and Weather Favor Brazil's Soybeans**

Brazil had no difficulty last year maintaining its place as the world's third largest soybean producer, though it was far outranked by the United States and Mainland China.

Brazil's harvest in 1970 rose 26 percent to approach the  $1\frac{1}{2}$  million metric ton mark (official estimate was 1,332,000 tons). U.S. production was about 40 million tons; China's was around 7 million.

Favorable prices encouraged Brazilians to increase soybean acreage. Good weather boosted yields. And soybeans pushed ahead of cottonseed (1.2 million metric tons) and peanuts (750,000 metric tons, in-shell).

Soybean growers in the southern States of Parana and Rio Grande do Sul have been very successful in rotating soybeans with wheat, using the same harvesting machinery for both and ending up with two cash crops a year.

Insect infestation reduced cottonseed output in 1970, and Brazilian vegetable oil producers made greater use of soybeans. As a result, soybean exports dropped to 290,000 tons from

310,000 in 1969. Exports of soybean cake and meal, however, were up a big 69 percent to 500,000 tons.

Under Brazil's newly published 4-year plans, the 1973 goal for unprocessed soybean exports is set at 500,000 tons. (22)

## Food Aid Makes a Turn

Economic aid to the world's developing nations mounted steadily throughout most of the 1960's as agricultural assistance took on new dimensions.

In every year of the decade—with the exception of 1962—a new post-war record was established for net flows of bilateral and multilateral aid from the major industrial countries. The most recent tally, for 1969, places economic aid in that year at \$13.6 billion. This includes assistance from private as well as public (mostly government) sources.

The leading donors in 1969 were the U.S., with \$4.6 billion; West Germany \$2.0 billion; France \$1.7 billion; Japan \$1.3 billion; and the U.K. \$1.1 billion.

The leading recipients, in order of ranking, were Asia, Latin America, and Africa.

The agricultural components of economic aid changed during the 1960's. Donor countries, as the decade wore on, gave less assistance in the form of commodities, and more in the form of capital and technical assistance.

Total food aid dropped from \$1.6 billion in 1963 to \$1.2 billion in 1968, latest year for which data on worldwide food aid were compiled. Meanwhile, by 1966 other kinds of agricultural assistance had tripled from the \$385-million average of 1962-64.

Largely responsible for the reduction in food aid were declines in agricultural exports under the United States P.L. 480 (Food for Peace) Program, following sharply increased production in many of the less developed countries. This—along with smaller amounts of U.S.

private aid—resulted in a 20-percent decline in overall U.S. economic aid in 1969 from the year-earlier level. Even so, U.S. assistance made up one-third of 1969 aid from all countries combined.

The fall-off in worldwide food aid consisted entirely of bilateral assistance, that given directly by the donating country to the recipient. However, multilateral food aid given through international agencies went up during the sixties, rising from \$44 million in 1963 to \$91 million in 1968.

Most of this increase represents disbursements by the United Nations' World Food Program. WFP food aid grew from a value of \$5 million in 1963 to \$72 million in 1969. Projections for 1976 call for \$251 million.

The United States contributes about half the food disbursed by the WFP. Canada provides another 12 percent. (21)

## Polish Meat Dilemma Offshoot of Foul Weather

Poland's agricultural growth has averaged about 3 percent per year—steeper than most major developed countries. In 1970, however, output dropped below trend for the second straight year.

Supplies of domestic grain and potatoes available for feeding in 1970/71 may be 1.5 million tons smaller than those of a year earlier.

Grain imports during 1970/71 are projected to reach about 3 million tons, compared with around 2.5 million tons in 1969/70.

Imports of grain are not expected to equal production losses, however, as the drop in livestock numbers has diminished domestic feed requirements.

Severe weather—drought, flooding, and winterkill—substantially reduced feed grain crops. As a result, cattle and hog numbers dwindled.

The reduced livestock inventories led ultimately to a lower meat output. Government meat purchases began declining last August, reaching 17 percent below year-earlier levels in October. And production wasn't expected to pick up over the past winter.

Through September, meat exports were down about 12,000 tons from 1969. But hard currency payment obligations virtually preclude further export reductions, and the tight domestic meat situation continues.

Meat imports—mostly from Mainland China—provide some relief, but were up only 2,000 tons last fall. Increased imports are likely for the near future.

The 1970 goal for per capita meat use was almost reached in 1967. Since then, however, the portion has leveled off, failing to keep pace with consumer demands. Although figures are still incomplete, meat consumption per person probably dropped in 1970, and is expected to remain at a lower level through 1971. (23)

### POLAND'S PRODUCTION, TRADE AND CONSUMPTION OF MEAT

Year	Production <sup>1</sup>	Exports			Imports, fresh	Per capita consumption
		Fresh	Canned	Bacon		
		1,000 metric tons				Kilograms
1960	1,646	25	37	48	12	42.5
1966	1,945	50	55	52	49	51.0
1967	1,974	62	57	55	40	52.3
1968	2,005	64	58	54	75	52.2
1969	2,079	71	55	50	34	52.6
1970 <sup>2</sup>	2,020	60	55	45	40	52.6

<sup>1</sup> Including pork fat, but excluding variety meats.  
<sup>2</sup> Preliminary.

# Recent Publications

**COTTON GIN OPERATING COSTS IN WEST TEXAS: 1968-69.** Charles A. Wilmot, Dale L. Shaw, and Zolon M. Looney, Marketing Economics Division. MRR 903.

An analysis of gin operating costs for the 1968-69 season in West Texas saw a reversal in trends of recent years. For the first time since 1965, ginning volumes in West Texas showed an increase over the previous year.

**MAJOR STATISTICAL SERIES OF THE U.S. DEPARTMENT OF AGRICULTURE—HOW THEY ARE CONSTRUCTED AND USED. VOL. 4: AGRICULTURAL MARKETING COSTS AND CHARGES.** Agr. Handbook No. 365.

This handbook is one of several that serve to update *Agriculture Handbook No. 118, Major Statistical Series of the U.S. Department of Agriculture*, published in 10 volumes during 1957-60. It incorporates a number of changes in methods and coverage over the past 10 years.

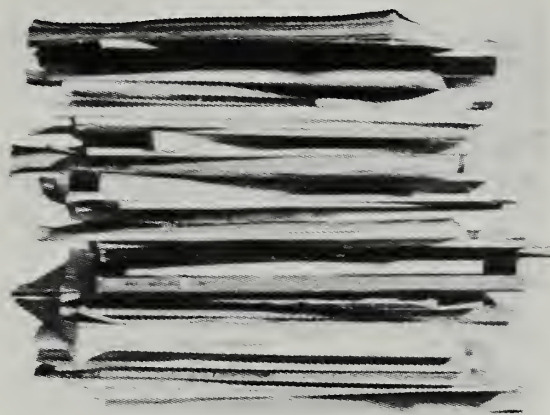
**WORLD DEMAND PROSPECTS FOR BANANAS IN 1980 WITH EMPHASIS ON TRADE BY LESS DEVELOPED COUNTRIES.** Jon E. Falck and Arthur B. Mackie, Foreign Development and Trade Division. FAER 69.

Alternative projections of world demand for bananas in the coming decade indicate that consumption and trade will increase from 4.6 million tons in 1944-66 to a range of 6.5 to 7.3 million metric tons in 1980. (See December 1970 Farm Index.)

**HAY HARVESTING PRACTICES AND LABOR USED, 1967: 48 STATES.** Walter L. Ferguson and Paul E. Strickler, Farm Production Economics Division, and Richard C. Max, Statistical Reporting Service. Stat. Bull. No. 460.

Relatively new practices, that some farmers are using in the hay harvest, permit substantial labor savings.

**THE 1970 AGRICULTURAL DATA BOOK FOR THE FAR EAST AND**



*The publications listed here are issued by the Economic Research Service and cooperatively by the State universities and colleges. Unless otherwise noted, reports listed here and under Sources are published by ERS. Single copies are available free from The Farm Index, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. State publications (descriptions below include name of experiment station or university after title) may be obtained only by writing to the issuing agencies of the respective States.*

**OCEANIA,** Foreign Regional Analysis Division. ERS-For 267.

This is the fourth annual agricultural report on current and historical facts on production and trade of farm products of this major food deficit area.

**FAMILY AND HIRED LABOR USED ON U.S. FARMS IN 1969.** Walter E. Sellers Jr., Farm Production Economics Division. Stat. Bull. 459.

Family workers were still the major source of farm manpower in 1966. While over half the small farms (sales under \$2,500) relied on family labor, only 6 percent of the large-scale farms operated with just family labor.

**THE EGG PRODUCTS INDUSTRY: STRUCTURE, PRACTICES, AND COSTS 1951-69.** Fred L. Faber, Marketing Economics Division. MRR 917.

Per capita consumption of liquid, frozen, and dried eggs has risen since

the early 1950's. But per capita consumption of shell eggs has declined to more than offset this amount. Per capita use of all eggs dropped 20 percent during 1951-69. Of total egg production the share of eggs for breaking—6.6 percent in 1951—was up to 10 percent by the late 1960's.

**LABOR USED ON U.S. FARMS, 1964 AND 1966: REVISED OCTOBER 1970.** Walter E. Sellers Jr., Farm Production Economics Division. Stat. Bull. 456.

Of farms with annual sales of \$5,000 or more, those affected most by increases in labor costs and manpower shortages in 1964 and 1966 were farms with sales of \$20,000 and up. These farms comprised 18 percent of all farms surveyed, produced 68 percent of all farm products sold and used 68 percent of all man-hours of hired farm labor in 1966.

**FOREIGN GOLD AND EXCHANGE RESERVES: CURRENT TRENDS.** Carolee Santmyer, Foreign Development and Trade Division, FGER 9.

Total free world reserves were \$83 billion at the close of fiscal 1970. They were up \$6.7 billion from reserves a year earlier. However, the liquidity ratio (reserves as a percentage of imports) declined for the third consecutive year, to 28.4 percent. Average world prices for primary products in fiscal 1970 were 3 to 4 percent higher than in the previous year.

**PROJECTION OF CALIFORNIA AGRICULTURE TO 1980 AND 2000: POTENTIAL IMPACT OF SAN JOAQUIN VALLEY WEST SIDE DEVELOPMENT.** Gerald W. Dean and Gordon A. King, Univ. of Cal. Agr. Expt. Sta., in cooperation with Farm Production Economics Division GFRR 312.

Although a land shortage is not imminent, some of the bastions of California's agriculture will have to make room for more people needing places to live and work. (See December 1970 Farm Index.)

**FACTORS AFFECTING ACREAGE DIVERTED UNDER THE U. S. FEDERAL-GRAIN PROGRAM.** Thomas A. Miller, Farm Production Economics Division, and Stanley H. Hargrove, Colorado State University ERS 453.

Since 1961, U.S. feed-grain programs have been adjusted annually to balance the production and utilization of feed grains. This report examines the impact of economic circumstances on annual withdrawals of acreage from production during 1961-69.

**A SURVEY OF AGRICULTURE IN GUATEMALA.** Kathryn H. Wylie, Foreign Regional Analysis Division. ERS-For. 305.

Agricultural production in Guatemala, even on a per capita basis, has increased substantially during the past 10 to 15 years. The gain is credited to higher coffee and cotton output in the early 1960's and increased food production later in the decade. (See December 1970 Farm Index.)

**THE BALANCE SHEET OF THE FARMING SECTOR: 1970.** Carson D. Evans, Robert D. Reinsel, Allen G. Smith and Forest G. Warren, Farm Production Economics Division. AIB-350.

This publication brings together major asset and liability accounts into one statement. This is the 26th issue in the series. Comparable estimates are available annually beginning with 1940.

**CHANGING FOOD CONSUMPTION PATTERNS IN THE REPUBLIC OF KOREA.** Amjad H. Gill, Foreign Regional Analysis Division. ERS For. 306.

Korean demand for agricultural products continues to exceed domestic production. The gap between the two is expected to widen as urbanization and industrialization accelerate. Increased imports, and perhaps use of substitute foods, are possible. (See March 1971 Farm Index.)

**RESTRICTING THE USE OF PHENOXY HERBICIDES-COSTS TO FARMERS.** Austin S. Fox, Robert P. Jenkins, and Paul A. Andrelenas, Farm Production Economics Division, and John T. Holstun Jr. and Dayton L. Klingman, Agricultural Research Service. AER 194.

This report deals with the economic effects on U.S. farmers that would follow a prohibition on use of all phenoxy herbicides. The report summarizes trends in production and utilization of phenoxy herbicides and discusses possible alternative weed control practices that are already in use. (See December 1970 Farm Index.)

**FOOD CONSUMPTION PRICES EXPENDITURES: SUPPLEMENT FOR 1969.** Economic and Statistical Analysis Division. Supplement to AER 138.

This supplement updates *Food Consumption, Prices, and Expenditures*, issued July 1969.

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14. and 15. *Marketing and Transportation Situation*, MTS-180, February 1971.
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NOTE: Unless otherwise indicated, authors are on the staff of the Economic Research Service (ERS) with their divisions designated as follows: Economic and Statistical Analysis Division (ESAD); Economic Development Division (EDD); Farm Production Economics Division (FPED); Foreign Development and Trade Division (FDTD); Foreign Regional Analysis Division (FRAD); Marketing Economic Division (MED); and Natural Resource Economics Division (NRED).

# Economic Trends

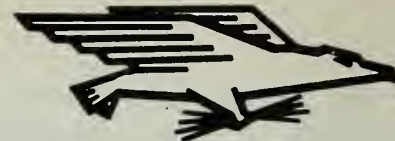
Item	UNIT OR BASE PERIOD	1967	1970		1971		
			Year	Jan.	Nov.	Dec.	Jan.
Prices:							
Prices received by farmers	1967 = 100	—	110	113	106	104	107
Crops	1967 = 100	—	101	96	102	100	103
Livestock and products	1967 = 100	—	118	125	110	108	110
Prices paid, interest, taxes and wage rates	1967 = 100	—	114	112	115	116	117
Family living items	1967 = 100	—	114	112	115	116	116
Production items	1967 = 100	—	109	108	111	111	112
Parity ratio		74	72	75	68	67	68
Wholesale prices, all commodities	1967 = 100	—	110.4	109.3	110.9	111.0	111.8
Industrial commodities	1967 = 100	—	110.0	108.3	111.3	111.7	112.2
Farm products	1967 = 100	—	111.0	112.8	107.0	107.1	108.9
Processed foods and feeds	1967 = 100	—	112.0	112.0	111.7	110.7	111.8
Consumer price index, all items	1967 = 100	—	116.3	113.3	118.5	119.1	119.2
Food	1967 = 100	—	114.9	113.5	114.9	115.3	115.5
Farm Food Market Basket: <sup>1</sup>							
Retail cost	Dollars	1,080	1,225	1,223	1,209	1,213	1,212
Farm value	Dollars	414	480	502	448	437	450
Farm-retail spread	Dollars	666	745	721	761	776	762
Farmers' share of retail cost	Percent	38	39	41	37	36	37
Farm Income: <sup>2</sup>							
Volume of farm marketings	1967	100	103	117	136	117	114
Cash receipts from farm marketings	Million dollars	42,693	48,678	4,369	5,079	4,219	4,200
Crops	Million dollars	18,434	79,589	1,853	2,781	1,984	1,900
Livestock and products	Million dollars	24,259	29,089	2,516	2,298	2,235	2,300
Realized gross income <sup>3</sup>	Billion dollars	48.8	56.2	—	—	55.8	—
Farm production expenses <sup>3</sup>	Billion dollars	34.5	40.4	—	—	40.9	—
Realized net income <sup>3</sup>	Billion dollars	14.3	15.8	—	—	14.9	—
Agricultural Trade:							
Agricultural exports	Million dollars	—	7,174	525	719	739	672
Agricultural imports	Million dollars	—	5,667	491	435	509	507
Land Values:							
Average value per acre	1967 = 100	—	<sup>5</sup> 115	<sup>5</sup> 115	<sup>6</sup> 118	<sup>6</sup> 118	<sup>6</sup> 118
Total value of farm real estate	Billion dollars	—	<sup>5</sup> 207.3	<sup>5</sup> 207.3	<sup>6</sup> 210.7	<sup>6</sup> 210.7	<sup>6</sup> 210.7
Gross National Product: <sup>3</sup>							
	Billion dollars	793.9	976.5	—	—	989.9	—
Consumption	Billion dollars	492.1	616.7	—	—	627.0	—
Investment	Billion dollars	116.6	135.7	—	—	137.1	—
Government expenditures	Billion dollars	180.1	220.5	—	—	223.2	—
Net exports	Billion dollars	5.2	3.6	—	—	2.6	—
Income and Spending: <sup>4</sup>							
Personal income, annual rate	Billion dollars	629.3	801.0	777.8	812.6	817.5	825.4
Total retail sales, monthly rate	Million dollars	26,151	30,371	29,570	30,208	30,441	—
Retail sales of food group, monthly rate	Million dollars	5,759	6,785	6,674	6,866	6,966	—
Employment and Wages: <sup>4</sup>							
Total civilian employment	Millions	74.4	78.6	78.9	78.6	78.5	78.9
Agricultural	Millions	3.8	3.5	3.4	3.4	3.4	3.4
Rate of unemployment	Percent	3.8	4.9	3.9	5.9	6.2	6.0
Workweek in manufacturing	Hours	40.6	39.8	40.3	39.6	39.6	39.7
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	3.36	3.29	3.39	3.46	3.49
Industrial Production: <sup>4</sup>							
	1967 = 100	—	106	108	102	104	104
Manufacturers' Shipments and Inventories: <sup>4</sup>							
Total shipments, monthly rate	Million dollars	45,712	55,516	55,070	54,068	55,370	—
Total inventories, book value end of month	Million dollars	82,825	99,698	96,200	100,032	99,698	—
Total new orders, monthly rate	Million dollars	45,928	54,953	54,119	54,291	55,766	—

<sup>1</sup> Average annual quantities of farm food products purchased by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1959-61—estimated monthly. <sup>2</sup> Annual and quarterly data are on 50-State basis. <sup>3</sup> Annual rates seasonally adjusted fourth quarter. <sup>4</sup> Seasonally adjusted. <sup>5</sup> As of November 1, 1969. <sup>6</sup> As of November 1, 1970.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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# THE FARM INDEX

U.S. Department of Agriculture/May 1971



Debits and Dinners Page 10

In many areas, corn producers will sometimes opt for soybeans when weather and other factors don't pre-  
 sage good profits from corn. This year, added incentives to plant soybeans are provided by attractive prices—a fifth higher than last season's—and uncertainty about a possible recurrence of the Southern cornleaf blight.

**"Some shift to soybeans seems probable,"** according to the April issue of the ERS Fats and Oils Situation. Between now and planting time, farmers' decisions on soybean acreage will be based on weather conditions, the soybean price versus corn's, and on the supply of blight-tolerant seed corn.

But even with a record soybean crop, as now seems likely, soybeans will be in a relatively tight supply position in 1971/72. From the March 1 planting intentions and taking into account the would-be yields if they keep to recent trends—the carryover next September 1 is estimated at only about 75 million bushels . . . and the total 1971/72 soybean supply at around 1.3 billion bushels. Due to dwindling supplies plus good demand, farm prices averaged, \$2.81 per bushel in September '70-February '71, or 50 cents above the 1969/70 period.

**A sharp jump in imports of certain cheeses** has prompted an investigation to determine whether these imports are interfering—or likely to interfere—with the milk price support program. The cheeses in question are Swiss or Emmenthaler, Gruyere-process, and "other" cheese having a purchase price of 47 cents per pound or more.

**Beef output** in July-December is expected to be up from the 1970 period. For the summer and fall, fed cattle marketings are projected "moderately larger," and summer prices, near the \$30/cwt. of July-September 1970.

The longer-range outlook, to 1980, calls for a slower advances in beef production relative to the rate of increase during the fifties and the sixties. Back then, more and more cattle were being fed to maturity rather than slaughtered as calves. By 1970, fed cattle marketings accounted for a fairly high proportion of total slaughter. So, most of the gains in beef output from

now on will have to come from increases in the beef calf crop.

**U.S. wool prices** in the second half of '71 will probably climb higher because of: slightly less wool production as indicated by this year's 3-percent decline in beginning-stock sheep numbers; recovery in wool demand from last year's postwar low; and the expectation of some rise in prices being paid for imported wools. Prices to wool producers in 1970 averaged 6.3 cents below the 41.8 cents a pound (grease basis) received in '69.

**The hog situation** will soon come full circle, judging by the Hogs and Pigs Report of March 22. Farrowing intentions for the 10 Corn Belt States, which account for about three-fourths of U.S. output, were as follows: December 1970-February 1971, up 6 percent from a year earlier; March-May, down 7 percent; and June-August down 15 percent.

Assuming producers carry out their intentions, by the end of the year the hog slaughter would drop below the 1970 levels.

The outlook for prices as of early April—the summer peak to come later than last year and prices will be sev-

eral dollars lower. . . . Fall prices to decline seasonally but the drop will be much less than in the fall of '70. . . . Final quarter prices to stay moderately above a year-earlier.

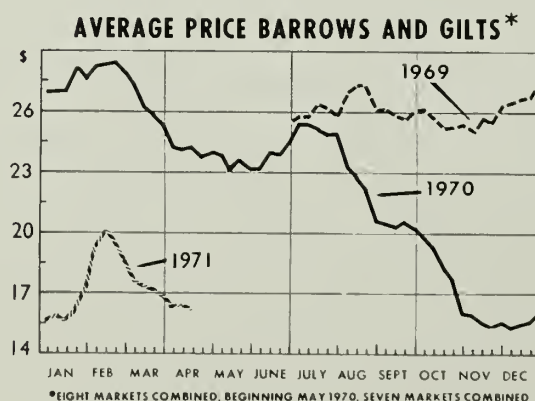
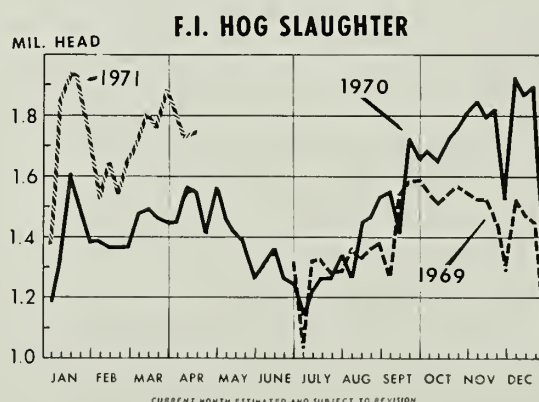
This promises to be **another year of generous production of white potatoes**, based on planting intentions for the late summer and fall States. With an average yield—and allowing for the long-term uptrend in yields—the crop could turn out to be only slightly below the record outturn of '70. The marketing season for that crop is now entering the wind-up stage. Grower prices have been disappointingly low throughout most of the season.

Intended plantings of sweetpotatoes are smallest of record, and 14 percent under the '70 acreage. This probably reflects a declining demand together with relatively heavy labor requirements for this crop. Per person use of fresh sweetpotatoes stands at 4 pounds per person, down from 6 pounds in 1960. Canned sweetpotatoes consumption rose from 1 pound in 1960 to 1½ pounds in 1970. Twenty years ago, usage of fresh and canned types totaled more than 12 pounds per person.

**Cigarette output in '70** was a record-breaking 583 billion, but this year a slight decline is likely. Reason is the expectation of reduced inventories, following a build-up in stocks in the second half of '71.

Despite the anti-cigarette publicity, U.S. smokers—including those overseas—used 3 percent more cigarettes than in 1969. Consumption per person (18 years and older) was 4,000 or 200 packs of 20, about the same as in 1969. This was below the peak consumption of 1963. With cigarette advertising at a lower level this year, total use is expected to hold steady.

**The first round of reports on the 1969 Census of Agriculture** is now off the press. Initial reports are on New Jersey, Wisconsin, Minnesota, and Iowa. Next in line are Ohio, Indiana, Illinois, and Michigan. To get the census publications, contact your local field of the Department of Commerce, or write the Publications Distribution



# Contents

Section, Bureau of Census, Wash. D.C. 20233.

**Foreign Spotlight: Focus on U.S. Agricultural Exports.** Continuing their record pace, exports during July-February 1970/71 totaled \$5.2 billion—up 17 percent from the same period of a year earlier. Gains in values of wheat and soybeans and soybean products accounted for two-thirds of the overall increase. Wheat was up nearly two-fifths, and soybeans and their products, a third. Other gainers: Dairy products, feed grains, and cotton. Only tobacco, meat, rice, and flaxseed fell from 1969/70 levels.

**USSR.** Soviet production of grain and cotton in 1970 topped all records by a wide margin. Meat output was also a new high. The exact size of the grain harvest has not been announced. Based on calculations, it was 185 million tons, up 8 percent from the previous high reached in 1966. Near-record Government purchases of grain—17 million tons more than in '69—provide for an ample exportable surplus this year.

**Australia.** The Australian Wheat Board has announced a big sale of wheat to the United Arab Republic. The amount is 18.4 million bushels (500,000 metric tons). It's a credit deal, with payments due in 3 years. Normally, Australia extends 1-year credits on wheat sales. The more liberal terms for the UAR reflect in part the sharpening competition among world wheat exporters. The recent sale brings total Australian wheat deliveries to the UAR to 1.2 million tons, which represents about half the UAR's wheat requirements for 1970/71.

**Canada.** Cattlemen continued rebuilding their herds in 1970 following a drawdown in inventories from 1966 to 1968. The supply of slaughter cattle got so low in 1970/71 that Canada—usually an exporter of feeder cattle to this country—had to import from the U.S. some 100,000 head for slaughter. Hog numbers, by contrast, were nearly a record high moving into 1971. Hog slaughter is expected to peak in the first 6 months of '71. Declines in the second half are indicated by a smaller spring pig crop.

## FARM

## RURAL

## CONSUMER

## FOREIGN

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Contents of this magazine may be reprinted without permission. They are based on research of the Economic Research Service and on studies done in cooperation with State agricultural experiment stations. Use of funds for printing this publication approved by Director of the Bureau of Budget, May 24, 1967. Subscription price: \$2 yearly (\$2.50 foreign). Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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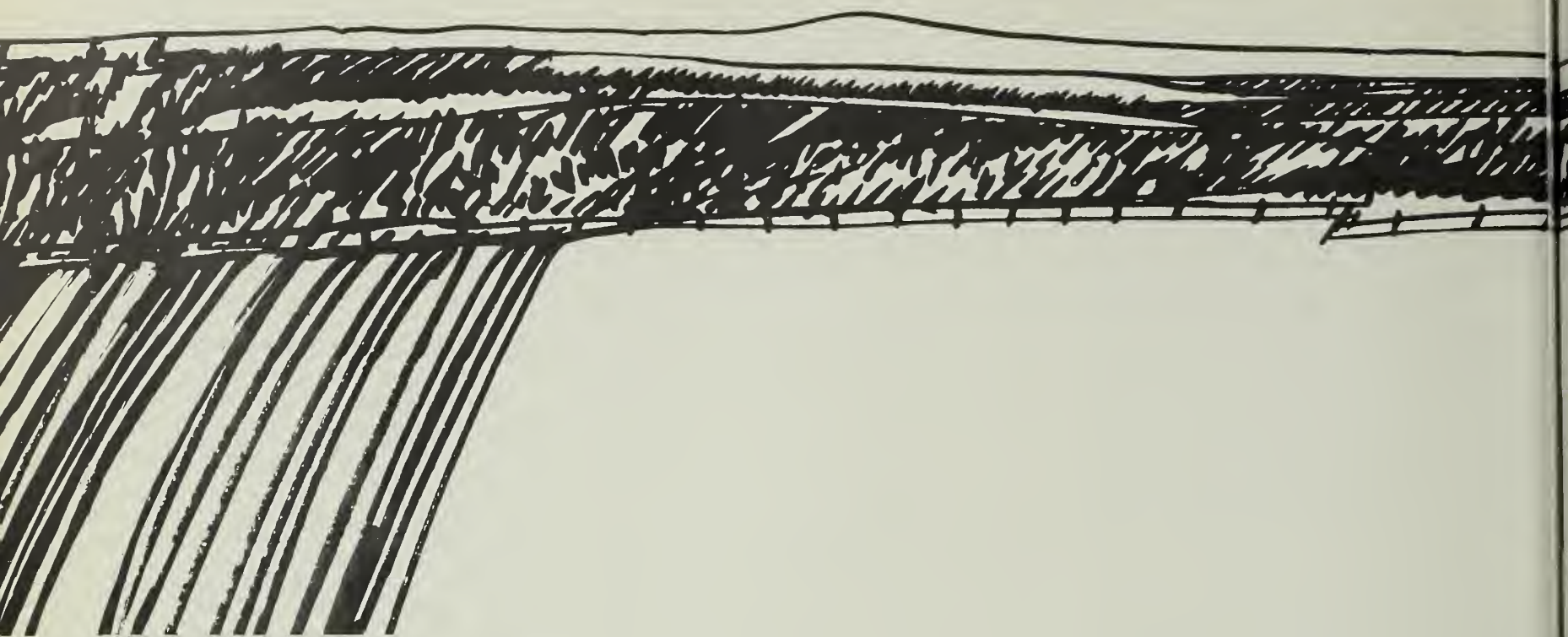
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The Farm Index is published monthly by the Economic Research Service, U.S. Department of Agriculture. May 1971. Vol. X. No. 5



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*A farm operator's income — whether or not it's all from farming — was found to be a telling factor in explaining the longevity of small units in the Corn Belt.*

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If all the corn grown in the Corn Belt were to be produced on holdings of 500 acres or more, there would be about half as many farmers in the Midwest as there are today.

Family-size farms produce an estimated 92 to 95 percent of today's total U.S. corn crop.

In the major Corn Belt States (Ohio, Illinois, Indiana, Iowa, and Missouri), these farms are typically about 500 acres or smaller. The viability of these operations is being severely tested.

Many small Midwest farms, however, have deep roots and strong staying power. It is unlikely—in the next couple of decades at least—that they will completely give way to “large” farms (those with over 1,000 acres).

Federal income tax returns for 1966 show that 692,000 individuals in the Corn Belt States had profits or losses from farming. These family-size farm operators and farmland owners can be categorized into four major groups:

About 60,000 individuals (less than 10 percent) are classified as

full-time farmers.

Over 200,000 (around 30 percent) either farm part-time or derive part of their income from nonfarm sources.

About 400,000 (over 50 percent) fall into a low-income or minimum-growth classification.

Landowners not operating farms constitute an important group of farm income taxpayers in the Corn Belt. They can often be classified in the upper-middle and high-income brackets, though some retired farm operators with income only from their landholdings would fall in a lower-middle or low-income group.

The four categories are not mutually exclusive. Over time, a farm operator may be in more than one of them. Exact data on number of “farmers” who fall into each category have not been collected.

*Which group has the greatest staying power? An ERS study says it's the full-timers and part-timers with either a high farm income or a high off-farm income.*

The full-timers generally manage units of sufficient size to provide the family with full employment and an acceptable level of income. Moreover, the net farm income is great enough to enable investment in farm expansion.

Operators in this full-time class

manage assets with a current value of \$200,000 or more. Typical farming units have at least 300 acres of corn (or corn and soybeans) plus an intensive livestock program. On row crop units of 500 acres and above, livestock may or may not be important.

Most operators of such a commercial family-size operation are between 30 and 55 years old. Older operators in this group generally involve one or more of their children in the enterprise or operate in partnership with another farmer. Nonfarm investments are often a part of the family's total financial resources.

For reasonably efficient family-size units that are relatively free of debt, a net cash income or cash withdrawal of \$35 to \$45 per acre is possible.

A 500-acre cash grain farm can therefore provide \$15,000 to \$20,000 in net cash income yearly for family living and other purposes. When an extensive livestock program is combined with grain production, similar per acre amounts may be available from a smaller acreage.

Before reaching retirement age, many such farmers will eventually control units of 1,000 to 2,000 acres. And with their know-how, they can provide strong competition with out-



## STAYING POWER OF THE FAMILY FARM

with the help of their children. Younger part-time farmers may expand the size of their operations but still not become full-time operators.

While part-time farmers rely on their farms for some measure of employment, others in a "part farm-income class" are less directly involved in any farming labor themselves. But they do get part of their income—often a sizable part—through control or ownership of farmland.

There appear to be about as many commercial farms with sales of over \$20,000 that are owned by individuals in the "part farm-income" class as by farmers who rely mainly on farm income.

Among the part farm-income group are the *individuals who own but do not operate farms*. They include retired farmers, farmers' widows and farmers' heirs. Often they are professional workers who also own farm real estate that they rent to operators.

In some cases, the operator may view his farm ownership and operation as a joint venture with an off-farm job or business. He may work full time off the farm, and operate the farm using hired labor. Certain farm losses may be deducted from other income for tax purposes, even though the farm is operated at

a high level of production.

The staying power of the part-time farming and part farm-income groups lies mainly in the fact that these people aren't completely dependent on income from their farms.

Yet they want to keep the farm in business for one or more of these reasons: personal satisfaction they get from "running" it; supplementary income they get from owning it; close personal ties between owners and renter-operators; and prospects for a rise in farm real estate values.

As for the *low income group*, a relatively large proportion of these farmers may quit farming in the next 2 decades. The operators are usually over 45 years old. Many are near retirement age. They generally lack sufficient incomes, assets, skills, or motivation to increase the size of their operations. Recent studies at Midwest universities have estimated that the gross income of farms in the low-income class is \$35 per acre less than the income of the family farms that possess the most staying power.

Some of the younger operators might one day become owners of viable units. Most in this category, however, will either assume off-farm employment to supplement their farm income, or they will abandon farming altogether. (1)

side investors who may attempt to form units of 4,000 to 5,000 acres.

To do this, they will need suppliers who will sell them seed, fertilizer, fuel and other supplies at prices as low as those paid by large units. They will have to seek out the most advantageous marketing channels, which may be through contract production or direct sales to processors. And farmers will need access to adequate credit on good terms.

*After the full-timers, the part-time farmers would seem to have the most staying power.* Part-time farm operators have been increasing in number, especially near cities in the eastern Corn Belt. Their row crop enterprises generally range from 100 to 500 acres or more.

Many part-time operators at one time had planned to become full-time farmers. But having acquired various academic or technical skills, they now find they can make more money from off-farm jobs. So they usually get hired labor to handle part of their crop enterprise and do the rest of the work themselves, perhaps

## Fertilizer Prices On the Rebound

Not so very long ago prices for fertilizers provided a rare exception to the rule that farmers' production costs are heading no where but up. But beginning with the spring of 1970—after more than 10 years of steady decline—fertilizer prices made an about-face.

Steeper prices are in view this year—by current estimates, perhaps 10–12 percent above late '69/early '70 averages.

Whether this signals the start of a trend will hinge mainly on the outcome of the fertilizer industry's bout with escalating costs.

One big worry is freight charges, contributing a substantial part of total cost package of producing fertilizers. Rail rates were raised on four occasions over the past 2 years, most recently in the fall of '70. Labor costs and prices paid for raw materials have also been trending uphill.

Manufacturers' costs to produce synthetic ammonia—main ingredient in nearly all nitrogenous fertilizers—are expected to go up. For example, natural gas accounts for three-fifths of the cost to produce a ton of ammonia. By one estimate, gas prices may increase 30 percent by 1975. If the entire increase were to be passed on to gas users, this would

raise the price of nitrogenous fertilizers by varying percentages. However, manufacturers will probably absorb some of the higher cost, so the net increase might come to 10 to 12 percent this year.

The farm price for phosphatic fertilizers is rising. This, despite softness in the world market for phosphate rock and extremely low sulfur prices. Domestic sulfuric acid prices are relatively firm because of probable added costs of pollution control. One major producer of sulfuric acid reports that pollution control costs an additional \$2 per ton—or the equivalent of a 7-percent increase over the \$27-per-ton price of acid quoted in late 1970.

Potash prices have stabilized, along with output. Although a 5-percent increase can be expected at the height of the spring shipping season, this encourages fertilizer mixers and wholesalers to take delivery before the heavy-use period so as to assure adequate supplies for farmers during planting.

About the effect of the corn leaf blight on the demand for fertilizers: Farmers who can get blight resistant seed this spring will fertilize heavily. On the other hand, those unable to get any resistant seed may use no more fertilizer than they did last year. Also, some farmers might opt for soybeans or sorghum instead

of corn. Typically, the rate of fertilizer application with soybeans is less than with corn. But, sorghum is fertilized much like corn.

A relatively encouraging part of the outlook for farmers is that fertilizer prices frequently erode as the planting season progresses. If this happens in 1971, the price advance may be held to 10 percent or a shade under.

Even with a 10-percent increase, fertilizer would still be a good buy relative to the prices paid by farmers 5 or 10 years ago. In the early sixties, anhydrous ammonia, for example, sold for twice what it does today.

Back then also, the fertilizer industry began to use new cost-saving technologies. As profit margins became increasingly favorable, more firms went into fertilizer production. Added incentive was provided by the anticipation of a surge in export sales.

When the bigger exports didn't materialize, producers dropped their prices to compete in the oversupplied domestic market. Many of the smaller plants were closed. Competition eased up, and prices finally bottomed-out in 1969. (3)

## Agriculture No Gravy Train

Though the net income per farm went up four-fifths in the 1960–69 period, farmers still have a ways to go to catch up with income levels in the nonfarm sector. In 1969, the per capita after-tax income of the farm population was 77 percent of the income of nonfarm people. The ratio reached 78 percent in 1970.

Much of this improvement relates not so much to gains in income from farming per se, rather, to gains in farm operators' income derived off the farm. In 1970, the per capita income payments to farm people from farming totaled more than 2½ times the 1947–49 average. Meantime, income payments from non-farm sources increased more than five fold. (2)

### AVERAGE PRICES PAID BY FARMERS FOR SELECTED FERTILIZERS

Period	Superphosphate					
	Anhydrous ammonia	46 percent P <sub>2</sub> O <sub>5</sub>	20 percent P <sub>2</sub> O <sub>5</sub>	Ammonium phosphate 16-20-0	Potash 60 percent K <sub>2</sub> O	Mixed fertilizer 6-24-24
<i>Dollars per ton</i>						
Average						
1957-59 . . . .	149.00	82.20	37.00	89.60	56.80	91.10
1966 . . . . .	119.00	80.90	41.40	81.10	59.90	85.10
1967 . . . . .	113.00	84.10	42.10	80.70	58.50	85.70
1968 . . . . .	91.40	78.40	43.20	78.40	49.10	81.80
1969 . . . . .	75.60	74.00	43.80	77.70	47.80	73.20
1970:						
Apr. 15 . .	75.00	75.10	45.40	76.90	50.90	75.00
Sept. 15 .	76.80	76.20	46.90	76.50	54.00	76.70

<sup>1</sup> Based on equivalent price for 55 percent K<sub>2</sub>O reported by SRS.  
Source: Agricultural Prices, Pr 1 (9-70), Statistical Reporting Service, USDA, September 30, 1970, and earlier issues.



Environmental quality is not priced like a loaf of bread. You can't buy 30 cents worth. It nevertheless bears a price tag—a two-sided one.

One side shows the damages caused by pollution and the adverse effects on society. The other side reveals the cost of correcting and preventing the unfavorable alteration of our surroundings.

Assuming the decision has been made to improve the quality of the environment, one question in particular wells to the surface. It is "Who pays for what?" Somebody has to put up the hard cash to buy a cleaner environment.

To the thinking of some people, industry or anyone else who pollutes should pay for pollution abatement. Others claim the government must assume the financial responsibility. Still others say those who benefit must pay.

Debate centers around not only *who* pays, but *how much*? In some cases, a rough idea of potential costs can be gotten from estimates of pollution's damages.

For example, damages from air pollution add an estimated \$800 million a year to the tab for commercial laundering, cleaning, and dyeing of fabrics . . . \$100 million a year to the costs of painting steel structures . . . and \$40 to \$80 million annually to costs of air travel when planes must

be rerouted due to poor visibility.

By one estimate, air pollution's damage to crops and livestock comes to around \$500 million a year.

But the price tag on *agriculture's* pollution of the environment is often a blur.

Nearly everyone would agree that foul odors emanating from feedlots are aesthetically insulting. Moreover, airborne ammonia volatilized from cattle urine can pollute water bodies located miles downwind from a feedlot. Absorption of airborne ammonia by surface waters can cause excessive enrichment of lakes and rivers, which in turn causes eutrophication.

But the same airborne ammonia also enriches range lands and fosters lush vegetative growth. It can increase production, reduce erosion and benefit both domestic and wild-life habitats.

In other instances, there can be no doubt about the adverse and costly effects of agricultural pollution. In Maryland, for example, 800 acres of oyster and clam beds had to be closed down because of bacterial contamination. The source was traced to a runoff from a large cattle feedlot. The cost to Maryland's eastern shore economy, which depends heavily on the fishing industry, was estimated at a half million dollars by that State's Health Department.

By and large it is difficult to pin-

point the cause of pollution when the pollutants enter the ecosystems from many sources. The costs of abatement are equally difficult to add up or to allocate among the offenders.

Mercury, to illustrate, escapes from oil wells, sulfur mines, coal mines, mineral smelters, burning fuels and enters the atmosphere. Rain and snow filter the air of pollutants, returning them to the rivers, lakes, oceans and to the land. Mercury has been used as fungicides and in paper making. Dentists use it for teeth filling.

The price tag is largely nonexistent when we speak of mercury pollution. We know little about mercury, aside from the fact that a concentration in body tissue can be deadly.

Agriculture is often blamed for nitrogen pollution. Yet nitrogen makes up 78 percent of the atmosphere and is present in all living tissue. Burning of fossil fuels, life processes, and the decay of organic material release concentrated forms of nitrogen into the ecosystem. The price tag for nitrogen pollution control also is being vigorously debated.

Of all of agriculture's problems with pollution, the one that appears the most costly to overcome is disposal of solid wastes. These account for over half the solid wastes produced in the United States. True,

not all the 2.3 billion tons of agricultural wastes can be considered pollutants. And frequently the wastes can be disposed of at little or no cost, such as those from range cattle and certain crops. However, costs to dispose of wastes from intensive livestock operations can be high, depending on the location of these operations and other factors.

The annual 2.3 billion tons of agricultural wastes far exceed the 250 million tons contributed by residences, commerce, and institutions. Of the 250 million, about 190 million are collected by public agencies and private refuse firms. The disposal cost runs about \$18 per ton—or \$3.5 billion a year.

All things considered, it is clear that the total cost of getting rid of all types of agricultural pollution will run well into the billions.

Not all decisions on environmental quality will be based on economics, however. DDT was first used to protect humans from insects. It saved many lives and eliminated many diseases. Later, it became a major input in producing food and fiber. More recently, it was recognized as having an adverse effect on other parts of the ecosystem and bans were imposed. Monetary values on the saving of lives, or the reduction of illness, have not been established. Neither can such values be placed on the adverse effects—the loss of wildlife and contamination of the food chain. But this example does not suggest we obviate the need for measurement.

Instead, the lessons learned from DDT should encourage a broader sense of economic and social responsibility; an increased awareness of the short-run and long-run implications of our actions; an attempt to determine if such actions and technology are in harmony with biological, social, and economic objectives.

Costs of controlling agricultural pollution are large and will vary widely depending on assumptions as to what is considered necessary, desirable and possible. As understanding of methods and techniques of

### *If 2,4,5-T Were Banned*

A just-published study estimates that a ban on the phenoxy herbicide 2,4,5-T would increase costs to farmers and other users by \$52 million to \$172 million.

The lower figure would be the case if 2,4,5-T were banned and all other registered herbicides were available as alternatives. Of the \$52 million, \$32 million would represent added costs to control weeds and brush on farms. Other domestic users—homeowners, utility companies, recreation and timber industries—would spend \$20 million more.

The \$172 million assumes no phenoxy herbicides could be substituted for 2,4,5-T. Added expense to farmers is estimated at \$44 million, and to nonfarm users, \$128 million.

All costs are based on estimated use, prices, and alternatives in 1969.

This ERS study notes that of the phenoxy herbicides, 2,4,5-T provides the most effective control of many species of brush, other woody plants, and herbaceous broadleaf weeds. However, consideration was given to prohibiting the use of 2,4,5-T in late 1969 as a result of reports this chemical may be a possible health and environmental hazard.

In April 1970, the registration of 2,4,5-T was suspended for all uses on lakes, ponds, or ditchbanks. Also, liquid formulations were suspended for use around the home, recreation areas, and similar sites. (6)

environmental quality control improve, these costs can be incorporated into economic analysis and improve the decision-making processes.

Obviously, without pollution abatement, society in general will suffer the damages or social costs. These costs range from aesthetic insults to debility and death. They include financial losses, inconveniences and fear of the future.

Some of the pollutants can be reduced at the source, with industry bearing the added costs. Other pollution problems, such as municipal wastes, must be controlled by governments. Additional costs may be

covered by government grants, subsidies, or other incentives.

The question of "Who pays for what?" would seem to depend on how clean we want the environment and how much society is willing to pay. It depends on what adverse effects society is willing to accept if steps are not taken to curb pollution. It depends on technological ability to reduce pollution and prevent new forms of pollution.

Finally, it depends on the legal-political and institutional structure: how these facilitate achievement of what is physically possible and of what is economically feasible.

*[This is the third in a series of articles on the environment. The next will deal with legislative action]. (5)*

## **Labor Investment Larger On Farm Than Factory**

Up till 1969, comparison of investment per worker in agriculture and manufacturing was difficult because the assets of the two industries were measured differently.

Agricultural data for the comparison are generally taken from the Balance Sheet of the Farming Sector. This source, prior to 1969, estimated production assets only on a *current* basis; the number of physical units (such as acreage, buildings, and equipment) multiplied by the current market value per unit.

But in manufacturing enterprises, assets are generally based on *cost*, less depreciation and other allowances. Data are supplied by the Quarterly Report on Manufacturing Firms.

Further difficulties in the comparison have arisen from different interpretations of a "production worker." In manufacturing, there's a sharp distinction between labor and management. Production workers refer to laborers only, not to total manufacturing employment.

On the farm, however, management and labor are often combined in the same individual. Employment figures from the Balance Sheet refer to all farm workers.

Based on the industries' usual measures of production workers and assets, it appears agriculture's cost per worker is one and a half times greater than manufacturing's: \$50,000 per farm hand and \$35,000 per production worker.

By making two adjustments, however, a more valid comparison can be made. The first change appeared in the 1969 Balance Sheet of the Farming Sector. Agricultural assets were estimated on a cost basis, as in manufacturing.

The second adjustment is the inclusion of management in manufacturing employment numbers.

On a cost basis, the average investment per farm worker is around \$28,000, versus about \$26,000 for each manufacturing employee.

Agriculture's investment still appears greater, but only by about 10 percent—not the margin indicated in earlier estimates. (15)

## Farm Work Force Shrinks 3rd Straight Year

The number of hired farm workers in 1970 declined for the third consecutive year. About 2.5 million persons worked on farms for salaries or cash wages at some time during 1970—4 percent fewer than in 1969. The drop in work force numbers reflects increased mechanization, and other labor-saving technology.

Most of the workers (76 percent) were men, and most (78 percent) were white. And many of last year's hired farm workers were young—their median age, 23 years.

Close to three-fourths of all hired farm workers in 1970 didn't reside on farms, although some lived on farms part of the year.

Farm waged work was the main occupation for around 550,000 workers. But only a little over 300,000 were year-round farm employees who averaged over 300 days of work.

Over half (1.4 million) the workers weren't in the farm labor force most of the year. This group consisted mainly of students (about 1 million) and housewives. (8)



*Men and Milestones*

WASHINGTON, D.C., 1922—*Department of Agriculture employees are becoming increasingly concerned over the prospect of declining farm prices. Members of the newly formed BAE (Bureau of Agricultural Economics) are preparing their first report on farmers' intentions to plant certain crops during the coming year. They hit upon the idea of calling in outside experts to interpret the data and tell what it means for future prices. Dr. O. C. Stine, an economist with the Bureau, is assigned to provide detailed statistics for the forthcoming meeting. His work becomes the basis of the first Agricultural Outlook Conference in April 1923.*

\* \* \*

As an economist and statistician, Oscar Clemen Stine was one of the men who made the 1920's a turning point for the Department of Agriculture.

Besides his crucial role in the first Outlook Conference, he started the commodity situation reports; he was instrumental in developing the concept of parity;

he founded *Agricultural History*, the chief journal for writings on the history of agriculture.

Born near Sandyville, West Virginia in 1884, O. C. Stine received his Ph.D. from the University of Wisconsin in 1921, and joined the BAE.

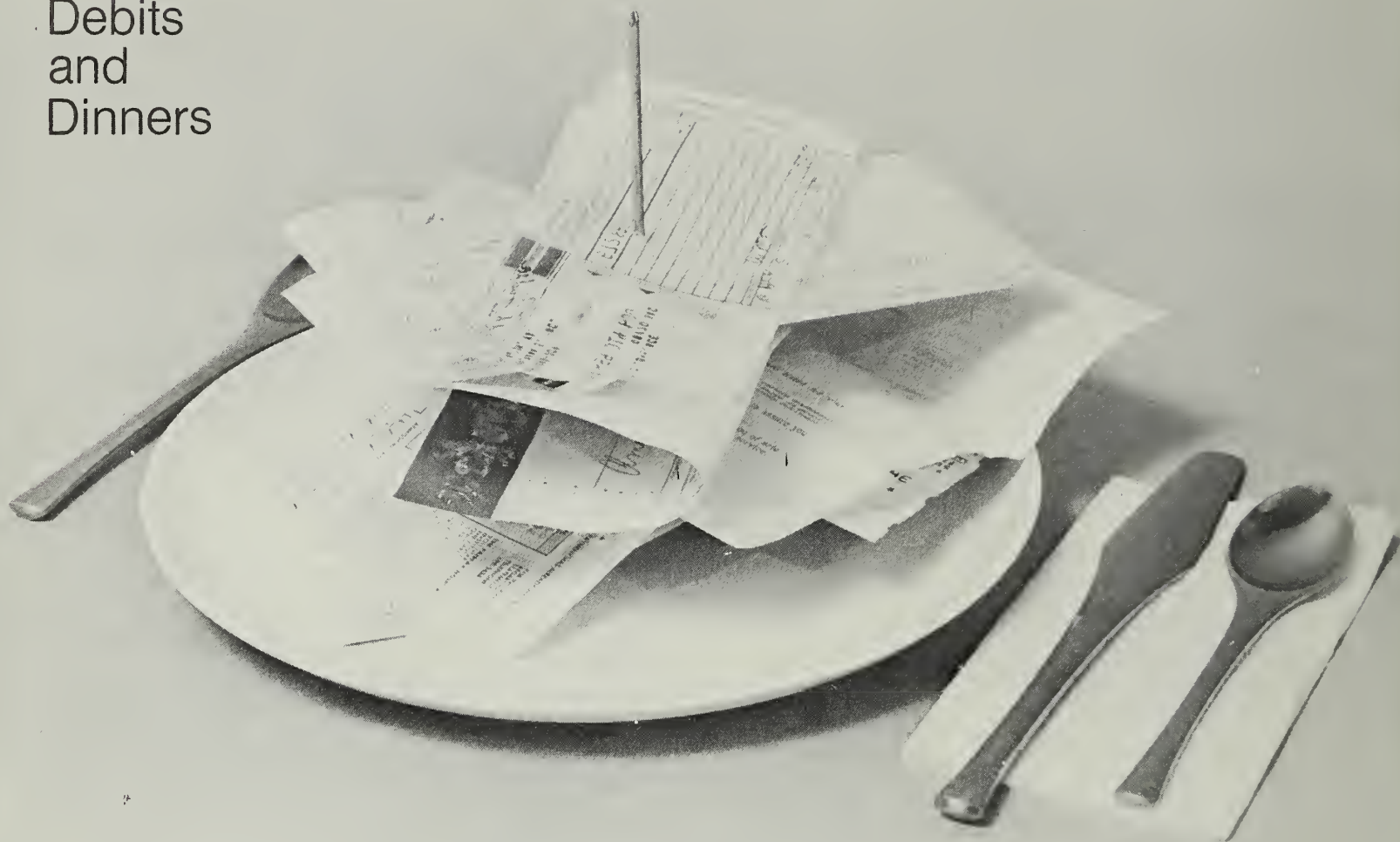
Stine found that the clerks under him had no training or experience with statistical analysis. So he recruited two statisticians from the University of Minnesota to train his clerks.

This experience gave Stine the idea of starting a Graduate School within the Department where senior personnel could teach other employees. Stine himself taught a course in price analysis the first year the Graduate School opened.

The School has grown from 800 students in 1921 to 22,000 students today. It has trained many staff members in the Department.

Retired from the Department since 1951, Stine lives with his wife on his West Virginia farm. He has remained active in education, history, and agriculture. (7)

## Debits and Dinners



*Families in debt may be forced to cut back on certain living expenses when payments fall due. A survey in Oklahoma says the food budget may feel the pinch.*

Only \$100 a month for 3 more years, and the Brown's family car will be paid for.

Meanwhile, they may have to scrimp a bit somewhere. And, chances are, they'll pare down their spending for food by about \$250 in order to meet the car payments.

To find out how much impact consumer credit has on the family food budget, USDA economists—in cooperation with the College of Home Economics, Oklahoma State University—surveyed 343 families in Enid, Oklahoma, population about 45,000.

The sample for this survey, the first of its kind, was limited to families who tend to be the heaviest

users of credit: those in which there are a husband and wife, the husband being under 45 years old.

One-fifth of the 343 families were not paying consumer debts in the survey year of July 1968/June 1969. About 44 percent of all families in the sample allocated at least a tenth of their after-tax incomes—averaging about \$6,850—to paying off debts. Over one-fourth of the families paid out over \$1,000 in the year under review. Average annual food expenditure was somewhat under \$1,500.

Here's what the survey showed—*Each dollar of debt repayment was associated with a 7-cent drop in food spending. In other words, 7 percent of debt repayment was being financed at the expense of food.* Had this money been used for groceries, it would have bought an estimated \$46 during 1968/69, the equivalent

of a 1½ week food supply for a family of four.

But there were wide variations from the mean. Depending on type and size of family and on after-tax income, the proportion of debt repayment financed at the expense of food was found to be much greater than 7 percent in some instances. There were also cases where the effect was negligible.

For example, food financed 25 percent of debt repayment in families consisting of husband and wife only. These repayments cut their food expenditures by \$166. This amount would have carried these households 7 weeks. Yet the level of debt repayment for these families, \$663 in 1968/69, was only slightly higher than the \$658 average for all 343 families.

Food spending was little affected by debt repayments in families with

one or two children under 6 years old. This was true even though they carried almost as much debt as the husband/wife family.

Why certain family types cut back on food buying while others didn't, is a moot question. This survey, in any case, was not designed to get into this aspect.

The amount of after-tax incomes was another variable. In families earning \$10,000 or more, food expenditures fell 13 cents for each dollar of debt repayment. These families also had a higher-than-average level of debt. Total reduction in their food budget averaged \$107, equal to a 3 weeks' food supply.

Unlike all other income groups in this survey, families with incomes under \$5,000 spent *more* for food as debt repayment increased. Food spending went up 9 cents for each dollar of repaid debt.

Researchers suspect that this may have something to do with the fact that many families experience considerable year-to-year variation in income. During the downswing, many whose normal income is above \$5,000 will have an income below this level. And when incomes fall temporarily, families usually try to maintain their normal scale of living. They may also have levels of consumer debt more in line with their normal, rather than current, income position. If so, within the under-\$5,000 class, high levels of debt repayment will be associated with high levels of food expenditures.

The survey team also reported that the families themselves often did not realize how the debt they assume might affect their current living expenses.

Families who had taken on new debt in the survey year were asked whether they believed they would have to trim their usual expenditures as a consequence. Only one in eight said "yes." Yet of the families making payments on earlier-assumed debts, nearly two-fifths said they had to make one or more "unplanned cuts" to meet the payments. Food

was the most frequently cited area where cuts were made.

In this sample, the proportion of variation in food spending that is explained by the level of credit used is very small. Credit and income together explain only 9 percent of the variation in the total sample and in the high income group the proportion explained fell to 2 percent. This should not be interpreted to mean that these are unimportant factors. Rather, it is an indication of the multiplicity of factors acting upon food spending.

Summing up their findings, the researchers noted the results are "suggestive and tentative." This was, after all, a small sample and not representative of the total U.S. population.

The proposed 1971/72 Survey of Consumer Expenditures will give a more complete picture. The data will be useful in determining the effect of consumer credit on not only food buying, but on a wide range of living expenses as well. (9)

## Corn Sirup Running Strong In Sweetener Race

Sugar use has picked up as a result of the ban on cyclamates. About half the 2-percent gain in 1970's usage (102 pounds per person) reflects the withdrawal of cyclamate sweeteners from the market.

But while sugar producers may have benefitted from the cyclamate ban, new competitors are emerging. One new product is an extraction of citrus wastes. Another is aspartyl-phenylalanine methel ester—150–250 times sweeter than granulated sugar.

Both products are currently being tested. They may well reclaim the market formerly held by cyclamates, but this is not expected to happen in the next several years.

Meantime, a more pressing concern to sugar producers is the recent advances in the corn sweetener industry—notably the develop-

ment and marketing of a high fructose corn sirup. (Fructose is another type of sugar; it's also called levulose and fruit sugar.) High fructose corn sirup is made by converting part of the dextrose in the sirup to the much sweeter levulose.

The proportion of levulose in the sirup determines the degree of sweetness. A sirup containing roughly 15 percent levulose has been available for some years. But recently a much sweeter 42-percent levulose product has been marketed.

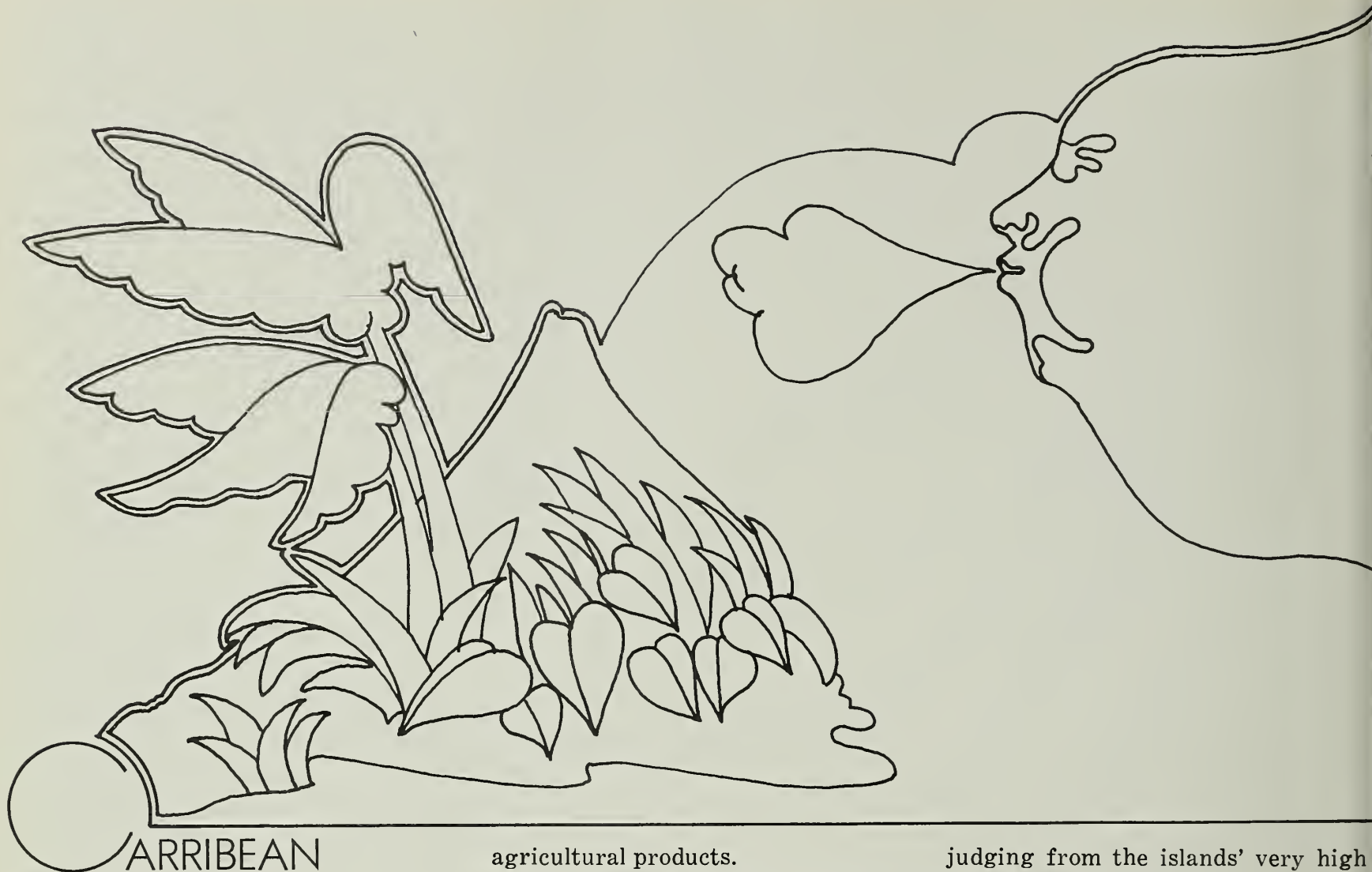
A high fructose sirup containing 42 percent levulose, 50 percent dextrose, and 8 percent higher saccharides is chemically quite similar to invert sugar containing half levulose and half dextrose.

Because of their greater sweetness, high fructose sirups compete more directly with sugar than did older types of corn sirup or cyclamates. For the same reason, these new sirups aren't particularly competitive with other corn sirups or dextrose. Thus, high fructose corn sirup is an added product for the corn wet milling industry, rather than a replacement for any of the industry's other products.

Comparative prices of sugar and high fructose sirups will probably determine to what extent the latter will be used as a substitute for regular sugar. Prices, of course, will depend on production costs for both products. Currently, little is known about the cost of producing high fructose sirups on a large commercial scale, particularly costs of converting dextrose to levulose.

Evidence shows, however, that certain industries tend to step up use of corn sirup as its price declines in relation to sugar prices. Between 1957 and 1966, a decline in the corn sirup-sugar price ratio resulted in corn sirup's taking a bigger share of total sweeteners used in the baking, dairy, and canning industries.

On a per capita basis, corn sirup consumption reached 20 pounds last year—about 50 percent above the levels in the 1950's. But sugar use has changed relatively little. (10)



## CARRIBEAN TRADE WINDS FAVORABLE TO U.S. AGRICULTURE

The Caribbean has emerged as a major expanding market for U.S. farm products. Demand for temperate zone foodstuffs has grown significantly, not only to round out the diets of island residents but to feed the mounting tide of North American visitors.

By the late 1960's, U.S. "exports" to the Caribbean crescent—including Puerto Rico and the U.S. Virgin Islands—totaled over \$2.5 billion. More than a fifth of the shipments were

agricultural products.

Agriculture is the predominant industry in the Caribbean, employing roughly 40 percent of the labor force. But agricultural production is largely confined to single crops—usually sugar or bananas for export. And land resources for domestic food crops and livestock are often limited. This—coupled with the rising tourist industry and pressures of a rapidly growing population—adds up to a need for more imports of food items.

In a number of countries, the surging tourist trade has emerged as the No. 1 industry. Tourism in the Bahamas, for example, has undergone phenomenal expansion. Well over 1 million visitors—almost 90 percent from the U.S.—flock to these islands each year. Currently, domestic crops supply only a fourth of the Bahamas' food needs. And the thin, rocky soils aren't suited for extensive agricultural production.

Already the major trading partner, the U.S. can expect farm exports to the Bahamas to increase,

judging from the islands' very high growth rate in population.

Tourism, both directly and indirectly, may be the largest single factor in the widening Caribbean market for our agricultural products. Beachside resort hotels are the ultimate destination for substantial shares of American farm exports.

The increased buying power of Caribbean residents plays a major role too. Over the 1960's per capita income rose substantially throughout the region, with the possible exceptions of Cuba, the Netherlands Antilles, and Haiti.

In many cases, higher incomes are an offshoot of the growth in tourism: the countries with the highest per capita incomes are generally those that lure the most tourists. Nevertheless, the Caribbean populace—as it achieves a higher standard of living—is upgrading the quality of diets with more imported food products.

Another factor in the expansion of Caribbean markets for farm commodities is that many territories

have geographic features that impose severe limitations on adequate agricultural production.

Curacao's semi-arid climate is not conducive to farming, and nearly all food must be imported. To reclaim Grand Cayman Island's vast swamp for agricultural use would probably prove too costly. And Haiti, one of the most densely populated countries in the Western Hemisphere, lacks suitable cropland, roads, and marketing facilities to develop its agriculture.

Efforts to diversify agricultural production have been moderately successful. On Montserrat, lands formerly devoted to sugarcane and bananas are being gradually shifted to carrots and tomatoes. Antigua reports a thriving commercial poultry industry.

For the most part, however, Caribbean lands still suffer from single-crop agriculture. The production of sugar for export has long dominated the region's farm output. Other crops grown primarily for export include coffee, bananas, cocoa, and citrus products.

Corn, rice, root crops, and tropical fruits make up the major crops for domestic consumption. To supplement these products, the Caribbean import list includes large supplies of meat and meat preparations, cereals, dairy products and eggs, fruits, veg-

etables, fats and oils, and animal feeds.

As most tropically-located Caribbean countries and territories produce similar farm products, intra-regional agricultural trade is limited, and typical temperate zone food products must be obtained from outside the area.

Trade in agricultural commodities is usually with parent countries, which often grant tariff preferences to their present or former colonies. For example, Martinique and Guadeloupe trade primarily with their mother country, France. Trade agreements allow these islands easy access to French markets and the European Economic Community.

Even so, American farm exports to Martinique and Guadeloupe expanded considerably in the second half of the 1960's, and the U.S. currently ranks second as their trading partner. The situation is the same in many Caribbean nations—Barbados, Guyana and St. Lucia, to name but a few.

Great Britain, long a major land holder in the Caribbean, grants Commonwealth tariff preferences to all its Caribbean affiliates. But the U.K.'s influence in this region is shrinking—to the advantage of the American farmer. Jamaica is a case in point.

This island, due south of Cuba, as-

sumed Dominion status within the British Commonwealth after gaining independence in 1962. The U.S. has since supplanted the United Kingdom as Jamaica's main supplier of both farm commodities and other products.

Although Bermuda and the Bahamas are U.K. colonies with Commonwealth tariff preferences, the United States has emerged as their major partner in trade. In 1968, about half of Bermuda's total imports were furnished by the U.S. Among the chief supplies—beef and poultry.

Why these countries are trading increasingly with the U.S. might simply be a matter of proximity. Add to this a growing familiarity with (and subsequent desire for) American goods—another byproduct of the booming tourist industry.

Over two-thirds of all our Caribbean-bound exports, however, end up in our own territories—Puerto Rico and the U.S. Virgin Islands. More than 20 percent of these exports are agricultural.

Since our country, Puerto Rico, and the U.S. Virgin Islands are in the same customs union, there is free flow of commodities from one to the other. Both of our Caribbean territories have thriving tourist industries, along with per capita incomes that rank among the highest in the Caribbean area. (14)

### U.S. EXPORTS TO THE CARIBBEAN—WHERE THEY WENT

Country or territory	1965		1968		Country or territory	1965		1968	
	Total	Agricul- tural	Total	Agricul- tural		Total	Agricul- tural	Total	Agricul- tural
U.S. \$1,000									
Barbados	8,751	2,037	14,437	3,192	Netherlands Antilles	74,376	10,107	87,668	12,849
Cuba	5	0	1	0	Surinam	35,642	3,107	32,447	4,137
Dominican Republic	74,946	24,500	113,711	30,168	Leeward & Windward Is.	13,029	2,701	17,589	3,956
Guyana	19,672	3,670	22,620	3,555	Bahamas	106,107	14,000	162,947	26,868
Haiti	21,312	9,760	23,970	9,297	Bermuda	43,792	6,140	62,475	7,821
Jamaica	86,701	20,766	146,034	28,783	British Honduras	7,963	2,332	9,406	2,471
Trinidad & Tobago	74,462	9,514	61,498	13,560	Puerto Rico	1,275,058	309,318	1,691,562	367,453
French Guiana	1,171	123	2,825	232	U.S. Virgin Is.	74,086	14,446	152,383	31,245
French West Indies	11,387	1,858	13,277	2,290	Total	1,928,460	434,379	2,614,850	547,837

Sources: U.S. Bureau of the Census: FT 125, FT 155, FT 420, FT 455 and country runs.

# Recent Publications

**COSTS AND RETURNS: COMMERCIAL TOBACCO-LIVESTOCK FARMS, BLUE-GRASS AREA, KENTUCKY.** Owen K. Shugars and John H. Bondurant, Farm Production Economics Division, and Daphene E. Tippet, University of Kentucky, cooperating with Ky. Agr. Expt. Sta. FCR 77.

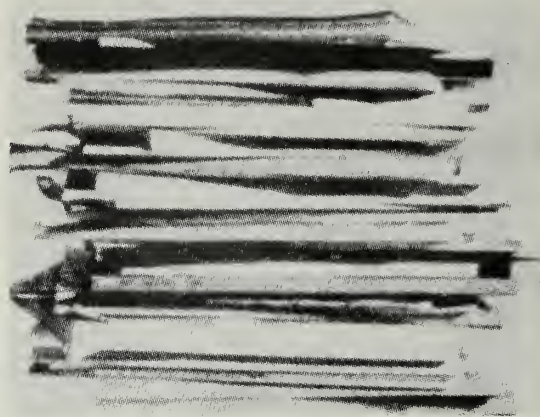
This is part of a continuing nationwide study of costs and returns on commercial farms and ranches in selected farming regions.

**PRICE DIFFERENTIALS FOR COMPLETE FEEDS, SUPPLEMENTS AND SHELLED CORN: A REGRESSION ANALYSIS.** Paul E. Nelson, Jr. Marketing Economics Division. AER 198.

Farm expenditures for feed rose from \$4.9 billion in 1960 to \$6.6 billion in 1969. During this period, feed expenditures represented more than 17 percent of total production costs.

**ESTIMATED COSTS AND RETURNS FROM COMMERCIAL VEGETABLES, FRUITS, AND PECANS, COASTAL PLAIN, SOUTH CAROLINA.** Charles P. Butler and D. E. Crawford, Farm Production Economics Division, in cooperation with South Carolina Agr. Expt. Sta., AE 334.\*

Detailed itemized budgets of pro-



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duction costs for commercial vegetables, fruits, and pecans grown under improved methods in the Coastal Plain of South Carolina provide basic data needed for farm planning.

**HOW GREECE DEVELOPED ITS AGRICULTURE: 1947-67.** D. C. Myrick and Lawrence A. Witucki, Foreign Development and Trade Division. FAER 67.

Though paved with problems, the route traveled by Greece resulted in one of the highest postwar growth rates in farm production among the less developed nations. From 1947-67, agricultural output in Greece increased at the compound annual rate of 4.9 percent.

**TREE NUTS BY STATES 1968-69: PRODUCTION USE VALUE.** Statistical Reporting Service. FRNT 4-1.

The analysis presents estimates of production, farm disposition, price, value, and utilization for 1968 and 1969 crops of almonds, English and Persian walnuts, filberts, macadamia nuts, pecans, and tung nuts.

**CONCEPTS INVOLVED IN DEFINING AND IDENTIFYING FARMS.** Richard J. Foote, Texas Tech University, cooperating with Statistical Reporting Service. ERS 448.

The current and prospective structure of agriculture and proposed systems for classifying farms are discussed in the report. The study reviews the history, emerging problems, and theory for gathering data.

## Article Sources

State publications indicated by (\*) may be obtained only from the experiment station or university cited. Manuscripts and special material are usually available only on request to authors.

1. Kenneth R. Krause, FPED, and Leonard R. Kyle, Michigan State University. The Economic Potential for Large Midwest Corn Farms (manuscript).
2. Rex F. Daly, ESAD. "Agricultural Situation and Outlook for 1971" (speech at 1971 National Agricultural Outlook Conference, Wash., D.C., February 23).
3. *The Farm Cost Situation*, FCS 42.
5. Joseph P. Biniek, NRED (special material).
6. Austin S. Fox and Robert P. Jenkins, FPED. *Restricting the Use of 2,4,5-T: Costs to Domestic Users*, AER 199.
7. Gladys L. Baker, ESAD (special material).
8. Robert C. McElroy, EDD. *The Hired Farm Working Force of 1970—A Statistical Report* (manuscript).
9. Joan C. Courtless, Consumer and Food Economics Division, Agricultural Research Service. "The Effect of Consumer Credit on Food Expenditures" (speech at 1971 National Agricultural Outlook Conference, Wash., D.C., February 24).

10. Roy A. Ballinger, MED. "The Outlook for Nonsucrose Sweeteners" (speech at 1971 National Agricultural Outlook Conference, Wash., D.C., February 24).
14. Wilbur F. Buck, FRAD. *Agriculture and Trade of the Caribbean, Bermuda, the Bahamas, the Guianas and British Honduras* (manuscript).
15. Allen G. Smith, FPED. *Comparative Capitalization of Agriculture and Manufacturing Sectors of the Economy* (manuscript).

NOTE: Unless otherwise indicated, authors are on the staff of the Economic Research Service (ERS) with their divisions designated as follows: Economic and Statistical Analysis Division (ESAD); Economic Development Division (EDD); Farm Production Economics Division (FPED); Foreign Development and Trade Division (FDTD); Foreign Regional Analysis Division (FRAD); Marketing Economics Division (MED); and Natural Resource Economics Division (NRED).

# Economic Trends

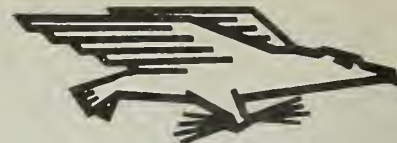
ITEM	UNIT OR BASE PERIOD	1967	YEAR	1970 Feb.	Dec.	1971 Jan.	Feb.
<b>Prices:</b>							
Prices received by farmers	1967 = 100	—	110	114	104	107	112
Crops	1967 = 100	—	101	98	100	103	105
Livestock and products	1967 = 100	—	118	126	108	110	117
Prices paid, interest, taxes and wage rates	1967 = 100	—	114	113	116	117	118
Family living items	1967 = 100	—	114	112	116	116	116
Production items	1967 = 100	—	109	109	111	112	113
Parity ratio		74	72	75	67	68	70
Wholesale prices, all commodities	1967 = 100	—	110.4	109.7	111.0	111.8	112.8
Industrial commodities	1967 = 100	—	110.0	108.7	111.7	112.2	112.5
Farm products	1967 = 100	—	111.0	114.0	107.1	108.9	113.9
Processed foods and feeds	1967 = 100	—	112.0	112.1	110.7	111.8	113.3
Consumer price index, all items	1967 = 100	—	116.3	113.9	119.1	119.2	119.4
Food	1967 = 100	—	114.9	114.1	115.3	115.5	115.9
<b>Farm Food Market Basket: <sup>1</sup></b>							
Retail cost	Dollars	1,080	1,225	1,227	1,213	1,212	—
Farm value	Dollars	414	480	509	437	450	—
Farm-retail spread	Dollars	666	745	718	776	762	—
Farmers' share of retail cost	Percent	38	39	41	36	37	—
<b>Farm Income: <sup>2</sup></b>							
Volume of farm marketings	1967	100	103	81	117	114	82
Cash receipts from farm marketings	Million dollars	42,693	48,678	3,367	4,219	4,157	3,300
Crops	Million dollars	18,434	19,589	1,052	1,984	1,851	1,100
Livestock and products	Million dollars	24,259	29,089	2,315	2,235	2,306	2,200
Realized gross income <sup>3</sup>	Billion dollars	48.8	56.2	—	55.8	—	—
Farm production expenses <sup>3</sup>	Billion dollars	34.5	40.4	—	40.9	—	—
Realized net income <sup>3</sup>	Billion dollars	14.3	15.8	—	14.9	—	—
<b>Agricultural Trade:</b>							
Agricultural exports	Million dollars	—	7,174	—	739	672	—
Agricultural imports	Million dollars	—	5,667	—	509	507	—
<b>Land Values:</b>							
Average value per acre	1967 = 100	—	<sup>5</sup> 115	<sup>5</sup> 115	<sup>6</sup> 118	<sup>6</sup> 118	<sup>6</sup> 118
Total value of farm real estate	Billion dollars	—	<sup>5</sup> 207.3	<sup>5</sup> 207.3	<sup>6</sup> 210.7	<sup>6</sup> 210.7	<sup>6</sup> 210.7
<b>Gross National Product: <sup>3</sup></b>							
	Billion dollars	793.9	976.5	—	989.9	—	—
Consumption	Billion dollars	492.1	616.7	—	627.0	—	—
Investment	Billion dollars	116.6	135.7	—	137.1	—	—
Government expenditures	Billion dollars	180.1	220.5	—	223.2	—	—
Net exports	Billion dollars	5.2	3.6	—	2.6	—	—
<b>Income and Spending: <sup>4</sup></b>							
Personal income, annual rate	Billion dollars	629.3	801.0	781.5	817.5	826.7	828.9
Total retail sales, monthly rate	Million dollars	26,151	30,371	29,980	30,537	31,034	—
Retail sales of food group, monthly rate	Million dollars	5,759	6,785	6,655	6,989	6,876	—
<b>Employment and Wages: <sup>4</sup></b>							
Total civilian employment	Millions	74.4	78.6	78.8	78.5	78.9	78.5
Agricultural	Millions	3.8	3.5	3.5	3.4	3.4	3.3
Rate of unemployment	Percent	3.8	4.9	4.2	6.2	6.0	5.8
Workweek in manufacturing	Hours	40.6	39.8	39.9	39.6	39.8	39.4
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	3.36	3.29	3.47	3.50	3.51
<b>Industrial Production: <sup>4</sup></b>							
	1967 = 100	—	106	108	104	105	104
<b>Manufacturers' Shipments and Inventories: <sup>4</sup></b>							
Total shipments, monthly rate	Million dollars	45,712	55,554	55,613	55,820	56,922	—
Total inventories, book value end of month	Million dollars	82,825	99,708	96,652	99,708	99,260	—
Total new orders, monthly rate	Million dollars	45,928	55,009	54,714	56,431	57,858	—

<sup>1</sup> Average annual quantities of farm food products purchased by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1959-61—estimated monthly. <sup>2</sup> Annual and quarterly data are on 50-State basis. <sup>3</sup> Annual rates seasonally adjusted fourth quarter. <sup>4</sup> Seasonally adjusted. <sup>5</sup> As of November 1, 1969. <sup>6</sup> As of November 1, 1970.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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and the migrant  
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# mechanization & the migrant

*Migrant workers by the tens of thousands will soon be leaving their home bases in the South to reap the harvest up North. For many of the itinerants, their old jobs may no longer be available.*

Agriculture's labor force has been shrinking steadily, but in recent years the sharpest rate of reduction by far has occurred in migratory farm wage workers.

During the first half of the 1960's, between 295,000 and 466,000 domestic migrant wage workers were employed on farms annually. By 1970, the number was down to 196,000 according to the annual hired farm working force survey.

The reductions in recent years were primarily due to adoption of labor saving devices and practices in vegetables and sugar beets. This trend will continue, portending further decreases in agriculture's requirements for migrant labor.

The number of foreign nationals doing migrant wage work in the U.S. dropped sharply after termination of the Bracero program in late 1964. There were only 16,000 employed in 1969 compared with from 200,000 to 335,000 in the early 1960's.

The impact of labor saving technology has been uneven, often creating a "vicious circle" effect that hampers both workers who need jobs and employers who need labor.

When mechanization of a crop reduces the number of migrants needed, those who had included the area in their itinerary are likely to skip it.

Growers of other crops worked by migrants in the same area have

fewer workers available at times of peak needs. They will have a strong incentive to mechanize or shift to crops using less labor. This, of course, reduces further the employment opportunities of migrants.

The typical migrant farm wage worker is young (63 percent were under 25 in 1970), male (82 percent), and white (92 percent). A sizeable proportion (31 percent) work less than 25 days a year.

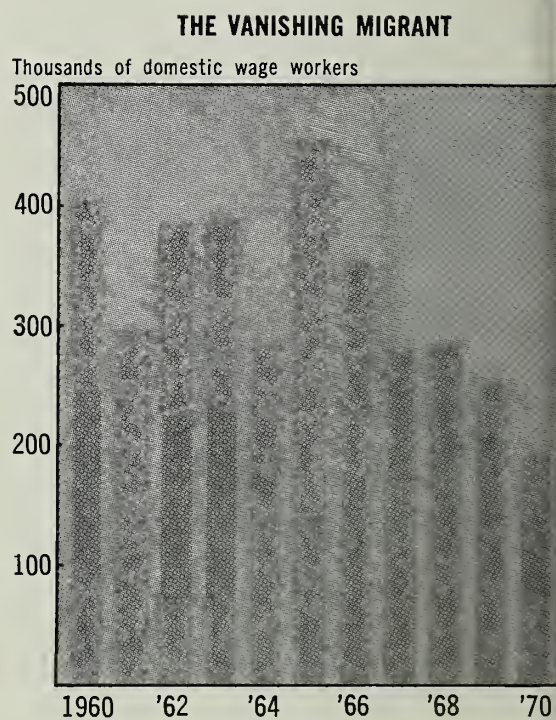
The majority do farm wage work only. The 94,000 who did nonfarm work in 1970 averaged 94 days.

The migrant also is low paid. Average earnings per year for those who worked 25 days or more in 1970 was \$2,007. Of this \$1,697 came from farm wages and \$309 from nonfarm employment.

Information on educational levels of migrants shows they have about the same years of schooling as the rest of the hired farm working force which—as a group—averaged 8.4 years against 12.2 for all workers.

Technological and economic pressures on migrants and other farmworkers will continue. Much of the hand labor in tobacco production may be replaced by machines in the next 5 years, and further displacement in fruits, vegetables, and sugar beets is likely.

Because of lack of skills and low levels of educational attainment, displaced migrants generally are poorly prepared for other jobs. Technology in agriculture—while significantly reducing the demand for unskilled labor—is slightly increasing the demand for higher skilled workers able to operate machines. Few migrants can qualify for these jobs



without training or other assistance.

Similarly, other industries are becoming increasingly scientific and technical and require higher levels of skills than formerly. Thus, the displaced migrants and other farmworkers find it increasingly difficult to make the transition to rewarding nonfarm employment.



A study of domestic migratory workers indicates they begin the transition to nonfarm work with jobs as unskilled or semi-skilled laborers, or in hotels, laundries, households, and other low-paying occupations. Meanwhile, they continue to work in agriculture when jobs are available. (1)

## Labor Use Would Drop With Steeper Wages

Higher farm wage rates in store for the seventies will hasten the trend toward substitution of capital for labor. The impact on employment will vary not only with the "would-be" levels of wage rates, but also by type of farm and the individual farm operation.

According to ERS estimates, total employment of hired farmworkers in the mid- and late-1970's would drop 8 percent from the 1966 base if the average wage climbs to \$1.45 per hour. A \$2.00-per-hour average would reduce overall use of hired workers by roughly a third.

(The minimum hourly wage for covered workers under the Fair Labor Standards Act was set at \$1.30, effective February 1, 1969. Farms covered under the legislation are those hiring 500 or more man-days of labor in the quarter of peak employment during the preceding year.)

The economists base their estimates on data from the 1966 Pesticide and General Farm Survey, on past studies on farm wages and product demand, and on the effects of labor legislation.

The specific assumptions in this analysis are that—

- The wage rate increases will apply to farmworkers either by legislation or by spillover effects that such legislation would have on farms not specifically included under legal provisions.
- The establishment of a uniform minimum-wage rate for all regions removes the wage differentials that have historically existed between regions.
- The long-run elasticity of demand for labor is  $-1.0$  on all types and sizes of farms; i.e., a 1-percent change in the farm wage rate would produce an opposite change in farm employment of such a magnitude that the total farm wage bill would remain the same.

The researchers emphasize that the estimates in the table below pertain to the aggregate demand for labor by farm type, and these can be used only as very rough measures. The projections would not necessarily apply at the individual farm level. Further, not all forces may have been accounted for at the aggregate level.

In the case of tobacco farms, labor needs will decline if mechanical harvesters increase in use. Adoption

would be on large units where machine cost can be justified.

In the "other livestock" category—which includes mainly cattle and hogs—the trend is toward larger units, and greater use of laborsaving devices. At the same time, many of the bigger farms may need a larger labor component to keep up with the fast-growing demand for livestock products and meat.

On individual dairy farms, the decrease in labor may be greater than the estimates of 19 to 41 percent. Among other things, this will depend on increases in milk production per cow, combined with the effects of mechanization and changes in herd size.

Vegetable crops present a mixed picture. Whereas harvesting of certain crops is already highly mechanized—tomatoes, carrots and snap beans—mechanization is still in the experimental or early adoption stage for lettuce, cabbage, cucumbers and strawberries. (2)

## Rams and Lambs Not for Sheepish Investor

Modern-day sheep ranching in Utah and Nevada—our Nation's top sheep-producing region—requires considerable capital.

Excluding the estimated value of grazing permits, the total investment per sheep ranch in 1969 averaged roughly \$215,000—up from \$179,000 in the early 1960's.

The overall investment increase was mainly the result of higher livestock prices and increased land values. In 1960, an acre of grazing land was valued slightly under \$12. By decade's end, however, the amount exceeded \$14. Over the same period, a good breeding ewe rose in price from \$22 to \$28. Average ram prices soared from \$58 in 1960 to \$128 in 1969.

Land and buildings made up 67 percent of total ranch investment in the early '60's, but fell to 60 percent by 1969. Meantime, livestock's percentage increased from 26 to 32 percent. (4)

### WAGE HIKES: THE "WOULD-BE" EFFECTS ON LABOR USE

Type of Farm	Average employment in 1966 <sup>1</sup>	Assumed wage per hour			
		\$1.45	\$1.60	\$1.75	\$2.00
		Estimated decline in employment between 1966 and 1975-80			
	Hours/farm	Percent			
Cash grain	852	13	21	28	37
Tobacco	642	33	39	45	51
Cotton	1,518	36	42	47	54
Other field crop	2,284	16	24	30	39
Vegetable	3,891	0	9	17	27
Fruit and nut	2,588	0	5	13	24
Poultry	1,972	0	0	2	14
Dairy	1,194	19	26	33	41
Other livestock	706	0	0	2	14
General	1,522	12	21	27	36
All types <sup>2</sup>	1,051	8	17	24	33

<sup>1</sup> Does not include Alaska and Hawaii. <sup>2</sup> Includes miscellaneous farms.

## Soybean Area Mirrors Crop Competition

In 20 of the past 24 years, farmers planted more acres to soybeans than in the previous year. Total harvested area swelled from about 11 million acres in 1946-50 to 40 million in 1966-70.

Behind this expansion: the development of the combine; greater use of tractor power; the advent of soybean varieties adapted to new growing areas; chemical weed control; and a tremendous growth in demand for soybean meal in livestock feeds and for soybean oil used by food processors.

According to a recent ERS study, soybean acreage was also strongly influenced by production controls on feed grains, cotton, and wheat. In years when there were no changes in farm programs for these competing crops, the area planted to soybeans increased an average of 5 percent over the previous year's plantings.

However, in 1950 and 1954 when allotments were established for corn, wheat, and cotton—soybean acreage rose 27 percent and 13 percent, respectively.

In all regions of the United States, more land planted to soybeans meant less acreage devoted to oats, wheat, hay, cropland pasture, and cropland not pastured, harvested, or used for diversion.

The increase in soybean acreage was also associated with a decrease in cotton acreage in regions producing that crop, and with a drop-off in corn acres in all regions except the North Central. (3)

## Value of U.S. Farmland Averages \$199 an Acre

Farmland has increased in value nationally in the last year—largely because of strong price advances in the Southeast and along the Eastern seaboard.

The average value per acre was \$199 in March, up \$6 from a year earlier. The national index of farmland value per acre climbed to 121

(1967 = 100, 3 percent above the index of March 1970).

Alabama and Delaware led all States with increases of 12 percent, followed closely by Georgia and South Carolina. In most States east of the Plains region, farmland value rose by more than the U.S. average.

By March 1 of this year, the total value of farm real estate had risen 2.7 percent to \$214 billion.

The average value of farm real estate per operating unit was \$83,300, up 5.6 percent from March 1970. (26)

## Farming's Income Share Slips in All Regions

The production and marketing of agricultural commodities may well be one of the Nation's leading industries. But farming accounts for a small part of the total personal income of people in the U.S. In 1970, less than 3 percent of personal income was directly attributable to farming per se.

The percentage has been trending downward for some years. In the 1963-69 period, farming's share of total personal income dropped from 3.4 percent to 2.6. All 10 agricultural regions experienced declines.

An analysis of data from Federal income tax returns for 1966 showed that even of the 3 million individuals reporting farm income in that year, only 1.2 million reported farming as their main source of income.

Among the production regions, the Northern Plains was clearly the most dependent on farming. Yet even there, fewer than one-fifth of all individuals reported farm earnings. More than 40 percent of these received most of their income from sources other than farming.

The regions relying least on farming were the Northeast and Pacific areas, where fewer than 2 percent of the individuals reported farm earnings.

Likewise, relatively few individuals derived most of their income from farming in the Southeast, Delta, and Southern Plains. Part of the reason may be that the per farm earnings are relatively low in these regions, and are more apt to be exceeded by off-farm income.

The average individual with combined earnings was better off economically in 1966 than in 1963. Together, farm and off-farm income averaged \$6,460 in 1966, compared with \$4,650 3 years earlier. (5)

### FARM INCOME: NORTHERN PLAINS RELIES ON IT THE MOST

Region	Personal income attributable to farming <sup>1</sup>			Individuals with farm income in 1966		
	1963	1966	1969	Number	As pct. of all individuals	With farming as major source <sup>2</sup>
	Percent			Thou.	Percent	
Northeast	0.8	0.8	0.7	198	1	33
Lake States	3.4	3.4	2.5	350	6	44
Corn Belt	3.8	3.8	2.8	759	6	45
Northern Plains	12.7	13.9	11.6	306	17	57
Appalachian	5.1	4.1	3.5	426	7	38
Southeast	4.9	4.0	3.5	200	4	30
Delta	9.6	7.7	8.1	145	6	32
Southern Plains	5.3	5.0	3.8	307	7	30
Mountain	5.9	5.6	5.0	146	6	39
Pacific	2.8	2.8	2.3	166	2	26
48 States	3.4	3.2	2.6	3,003	4	40

Sources: Departments of Commerce and Treasury. <sup>1</sup> Personal income is current income from all sources, including transfer payments, measured before taxes except for individual contributions to social security. <sup>2</sup> Among individuals with farm income, those reporting farm losses accounted for more than half of all individuals with a nonfarm major income source.

# Environment:

## THE LEGISLATIVE RECORD

Nineteen-seventy was what some observers have described as a "pivotal year" in environmental action. The President signed into law several major pieces of legislation relating to environment problems.

This year, as of early May, there were some 2,500 bills and resolutions on the environment that were pending consideration by the 92nd Congress. A number of bills provide for more controls on the use of agricultural pesticides. Others call for a regional water quality act, a national environmental data system, and an environmental financing authority, to name only a few.

One way or another, some of the legislation being considered—or already passed into law—will affect U.S. farmers, agribusinessmen, and others who help produce agricultural commodities or process or market them. To briefly review some of the laws enacted last year—

*The National Environmental Policy Act (Public Law 91-190).* Signed by the President on January 1, 1970, this is perhaps the most significant legislative act relating to the environment. It establishes a national policy on the environment, provides for a Council on Environment Quality and requires that environmental impact statements be pre-

pared for Federal actions.

The general policy declaration in the Act is to encourage a productive and enjoyable harmony between man and his environment; to promote efforts that will prevent or eliminate damage to the environment and biosphere, and stimulate the health and welfare of man; and to enrich the understanding of ecological systems and natural resources important to the Nation.

The Council on Environmental Quality established under the Act started operations on February 1, 1970. In August, the Council published its first annual report. Of particular interest to agriculture were the Council's views on the need to keep attractive rural lands from being consumed by urban development. When considering "what needs to be done," the report stresses intensified research and action approaches to minimize agricultural pollution caused by plant nutrients, animal wastes, and pesticides.

In the transmittal of the Council's report to Congress, the President called for a National Land Use policy and for new approaches to recycle what now are considered wastes. He also included proposals designed to encourage growth in rural areas, small cities and towns.

A provision in the Environmental Policy Act requires that detailed environmental impact statements be submitted by Federal agencies with every recommendation or report on proposed legislation or other major Federal actions that might affect the quality of the environment. The impact statements are submitted to the Office of Management and Budget and the Council on Environmental Quality. About 300 statements are being submitted monthly.

*The Resource Recovery Act (91-512).* It provides funds for the construction of improved solid-waste disposal facilities and for demonstrations of area-wide resource-recovery systems. Special studies will be conducted to determine recommended incentives or disincentives to accelerate the recycling of materials from solid wastes, with emphasis on motor vehicle hulks. Success of these studies would improve the rural areas by minimizing their use as auto grave yards.

The law also establishes a National Commission on Materials Policy. The Bureau of Mines is authorized to spend \$51 million for research in metal, mineral, and solid waste disposal.

*The Environmental Education Act (91-516).* Its purpose is to encour-

age and support the development of new and improved curricula designed to enhance the understanding of environmental quality problems. The Act provides support for education programs at the elementary and secondary school levels, as well as training programs for teachers, public service personnel, and community, labor, industrial, and business leaders and employees. The program is designed to reach a broad target group and, presumably, grants can be made to any public agency or private non-profit organization engaged in environmental quality improvement. The Act provides \$5 million this fiscal year, \$15 million in 1972, and \$25 million the following year.

*The Clean Air Act Amendments of 1970 (P.L. 91-604).* It requires the development of a non-polluting automobile by 1976, authorizes \$1.1 billion for research over the next 3 years and authorizes the setting of national air standards. It gives a time schedule for States to establish and enforce a clean air program. Industrial emissions hazardous to public health are subject to mandatory Federal standards. New factories, power plants, and other stationary sources of pollution will be required to use the best control technology available. This legislation provides for citizen suits and provides for a fine of \$25,000 per day of violation.

*Public Law 91-617.* This law, an amendment to the Consolidated Farmers Home Administration Act of 1961, broadens the lending authority of the Farmers Home Administration. It permits the use of insured loans to tax-exempt public bodies for sewer and water facilities. It also broadens some of the authority to include county organizations and waste districts, in addition to municipalities. Farmers Home Administration loans and grants are made to groups serving open country and rural towns and villages with population of up to 5,500.

Besides including environmental quality control in his 1970 State of

the Union message, President Nixon presented a special message to Congress on the subject. Among other things, he proposed a \$4-billion appropriation to cover the Federal share of a \$10-billion matching-fund program for waste treatment facilities to be allocated over the next 4 years.

Action was taken, or progress was made, on most of the President's recommendations. In October 1970, the President signed a bill authorizing \$1 billion in funds for grants to States for waste-treatment plant construction, and also authorized the use of a \$440 million carryover from fiscal 1970 funds.

Executive Order 11574 directed the Corps of Engineers to implement a system of Federal permits for industrial discharges into nearly all U.S. waterways. The authority for the permits is an old 1899 law known as the Refuse Act. Permits for all new discharges will be required immediately. Plants already discharging into waterways will have until July 1, 1971, to secure permits.

The applications for permits are expected to provide a catalog of the wastes that industry is putting into the Nation's rivers, lakes, and estuaries. Municipal sewage is specifically exempted from permit requirements. Anyone who points out violations of the Refuse Act is entitled to half of a \$2,500 maximum fine specified for violators. More importantly, the Refuse Act can be used to seek antipollution injunctions.

President Nixon in late 1970 pulled together several functions of existing agencies into a new *Environmental Protection Agency*. The role and function of EPA, an independent executive agency, is to: (1) establish and enforce quality standards, (2) conduct research on the adverse effects of pollution and on methods of control, (3) administer grant programs and provide technical assistance, and (4) assist the Council on Environmental Quality on policy matters. EPA will have 10 regional offices and now has 5,600 employees. Its budget is \$1.4 billion

for fiscal '71.

Among EPA's numerous activities is the regulation and monitoring of pesticides—a function formerly performed by USDA.

Within USDA, Secretary Hardin has established an *Environmental Quality Executive Committee*. The functions of the Committee are to coordinate the Department's responses to Congress, the Office of Management and Budget, and the Council on Environmental Quality; and to initiate and review legislative and policy proposals pertaining to environmental matters. The committee also provides guidance to Departmental information and training programs.

The Department, through its Executive Committee, currently is reviewing its programs to determine how they can be modified to assist rural America in meeting its problems and fulfilling its responsibilities for maintaining a quality environment.

Secretary Hardin is seeking new directions for the Department's program for the environment. The Department's environmental program for the 1970's, as it is now taking shape, will include five chief elements:

- ✓ Identification, retention, and protection of land for agricultural production, with particular concern for Class I and II land, since it is of limited supply.
- ✓ Designing of new approaches to the use of land released from agriculture for esthetic and recreational purposes, especially around population centers.
- ✓ Stimulation of selected small- and medium-size growth centers around the Nation.
- ✓ Intensification of efforts to determine the capacity of land to absorb wastes and to design means of converting wastes into beneficial uses.
- ✓ Finally, modification in the use of agricultural chemicals, to include a number of biological control mechanisms that would replace the more toxic chemicals. (6)

## City-County Merger Gets Vote of Approval

Residents of the rural-urban fringe of Nashville, Tenn., who were brought into a metropolitan government by a city-county consolidation, generally liked the improved services they got, despite a hefty increase in taxes.

Most rural voters opposed the consolidation of Nashville with Davidson county when it was first attempted, unsuccessfully, in 1958. Rural opposition was still widespread when the plan was voted in 4 years later.

An ERS-sponsored study, however, shows that fringe residents have realized solid gains from the merger. The study also indicates that they were aware of these improvements and generally satisfied with the local services provided by the metro government.

Impetus to consolidation was a collection of ills similar to those affecting many urban areas of the nation. Population was growing rapidly in the suburbs and declining in the central city. Increasingly, fringe residents tended to work in the central city while farm employment shrank rapidly.

Land use was inconsistent and haphazard. A mixture of subdivisions, farms, and commercial buildings dotted the countryside.

Government services for both urban and rural residents improved following the consolidation.

Most significant improvement was made in the school system. Expenditures per person increased in both city and county. The curricula were expanded, teachers' standards improved, and additional administrative and supervisory staff added. Spending for textbooks increased fourfold. School health and pupil personnel services were consolidated.

The new metro government generally upgraded public schools in the fringe area. Teachers' salaries were equalized and all schools now offer the same basic curriculum.

Law enforcement was strengthened

by the consolidation. City and county patrols were merged and a county-wide professional police operation instituted. Major crime declined 7 percent in Nashville in 1965 while increasing 5 percent nationally.

Under the new metro government, a park board was established with authority to acquire park land in advance of urban development. Priorities were established and school and park facilities were combined for recreational use.

Administration of road maintenance was improved. Larger resources made it possible to buy specialized equipment. Expenditures for general services in rural areas increased sharply.

Costs rose with the improvement in services. Expenditures the first year were about 7 percent higher than the total for the separate jurisdictions the preceding year.

Most noticeable to rural fringe residents was a sharp shift in taxes from urban to rural residents. In the first year, property tax rates of rural residents rose about a third while those of city residents dropped slightly.

In the second year, the metro government broadened its revenue base by adopting a sales tax and a user charge for sewer and water financing. Tax rates on property were reduced.

An opinion survey showed that fringe residents were generally satisfied with the improved services, but had reservations about the tax situation.

More than four-fifths rated satisfactory all services as a whole, while more than half were satisfied with each type of service.

More than two-thirds of the rural residents thought the metro government more efficient than the previous setup. About the same proportion said they received as much or more attention from metro councilmen than they did from their magistrate under the previous county government.

About 60 percent considered taxes

too high under the metro government. But 54 percent said their present attitude toward local taxes was about the same, or more favorable, than under the county government.

Also, well over half—57 percent—of the fringe residents believed that the tax burden under metro was more fairly distributed. (7)

## The Better Educated Have Better Abodes in Ozarks

In the rural Ozarks, if the head of the family has at least finished high school, has a good income as a white collar worker, and holds a mortgage on the home, chances are that his home is air conditioned, has hot and cold running water, and was built since 1949.

This information comes from Economic Research Service interviews with some 1,400 rural Ozark households.

The results showed that the quality of rural housing was significantly related to household incomes. Yet the relationship was far from perfect. Of the households with incomes at the seriously deprived level, only about two-thirds lived in substandard houses and nearly one-third actually had homes that met minimum standards of quality.

On the other hand, one-fifth of the most affluent households (in the highest of five income levels studied) lived in dwellings designated as substandard.

To a significant degree the higher the level of formal education of the head of the household, the better the quality of the house the family lived in.

The same was true of the type of employment of the household head. White collar workers had the highest quality homes on the average, blue collar workers' homes came next and service workers' abodes were third.

But mortgaged homes by and large were better than homes that were free and clear of mortgage encumbrances. The likely reason for this is that newer homes were more apt to be mortgaged.

Age and sex of the head of the household appeared to have no statistical relationship to home quality in the Ozarks. Evidently many of the older household heads whose spouses have died had adequate homes before their incomes were reduced.

Farm houses were found to be about the same quality as rural non-farm houses, probably because many Ozark farmers had off-farm incomes.

Renters lived in houses that were substantially as good as those that were owned outright or mortgaged.

Overall it was found that only 58 percent of the differences in quality of homes was associated with variations in household income, level of education and the market value of the property. (8)

## Special Taxation For Farm Preservation

Will granting tax incentives actually help preserve farmland or "open spaces," particularly in the rural-urban fringe? There are no hard and fast answers.

Nevertheless, pressure for some sort of special treatment for farm and other open land has prompted nearly half our States to enact policies for "differential assessment" of property used for agriculture. This is a direct departure from the traditional American property tax that is imposed at a uniform rate on nearly all property, based on assessed market value.

Differential assessment laws fall into three broad categories: preferential assessment, deferred taxation, and restrictive agreements.

Under preferential assessment, land devoted to agricultural use is assessed on the basis of its value in *that* use, as opposed to its market value for potential use, such as for housing subdivisions and recreation communities.

Opponents of preferential assessment claim the tax advantages often benefit land speculators rather than farmers. They maintain that speculators can get their property classified as farmland by performing min-

imal farming operations.

Weaknesses in preferential assessment have led some States to adopt deferred tax laws. To qualify for deferred taxes in New Jersey, for example, a landowner must hold over 5 acres actively used for agriculture, both in the appropriate tax year, and the 2 previous years.

If the landowner changes any land under this program into nonagricultural use, a "roll-back" tax is levied. This is imposed for the year the change is made, plus the 2 preceding years.

The roll-back equals the amount that was saved each year because of the special agricultural assessment. It removes some of the incentive for individuals holding land for relatively near-term urban use to apply for the differential assessment.

Under the preferential assessment and deferred tax laws, the community has no alternative but to grant financial benefits to owners who qualify and wish to continue farming. This can result in a clash of interests if the community decides there are farms located where urban growth should be encouraged.

To meet this problem, several States have enacted legislation for restrictive agreements. These are voluntary, but legally binding agreements between landowners and the local government.

In Hawaii, for example, a farm owner may petition the State to receive the differential agricultural assessment. The petition is granted if the State considers agricultural use of that land in accord with Statewide development plans.

In return, the farmer agrees to keep his land in agricultural use for a minimum of 10 years. The contract is always renewable, but after the fifth year, *either party* may cancel the agreement. Advance notice of 5 years, however, is required.

An important advantage of the Hawaii approach is that it's tied closely to planning and zoning, so it can be used to guide land in particular areas into the uses the community wants. (9)

## Satellites May Reflect Farmland Use

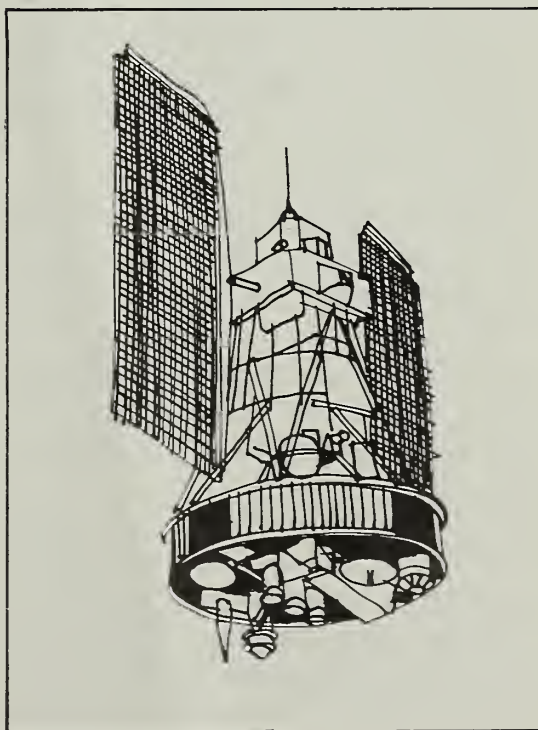
The U.S. Department of Agriculture may go to outer space to get the facts for putting together its studies on land use. Earth orbiting satellites could provide much of the data now obtained by conventional methods.

Approximately 90 percent of the data now needed for the Department's periodic land use report could be obtained directly from satellite imagery, according to a recent study based on the simulation of satellite-scale photography. An additional 5 to 8 percent of the data, though not directly discernable, could be inferred from imagery and supplementary sources.

Satellite imagery permits specific and use data to be tied to specific geographic locations. This should greatly increase the value of the USDA periodic report as well as other studies such as the simplification of land use inventories.

Unobtainable from space photos are data relating to land ownership; crops grown as part of agricultural programs; end-use of specific crops; transitional vegetation areas and some multiple-use areas.

Weather problems are the most serious drawback to successful use of satellite imagery. (10)



# BUSINESS AS USUAL AT THE

*Sales of livestock direct from farm to packer are gaining momentum. But the figures on nationwide marketings show that thousands of producers still prefer the auction.*

The livestock auction industry—now mature and thriving—was born and raised during the Roaring Twenties and Depression Thirties.

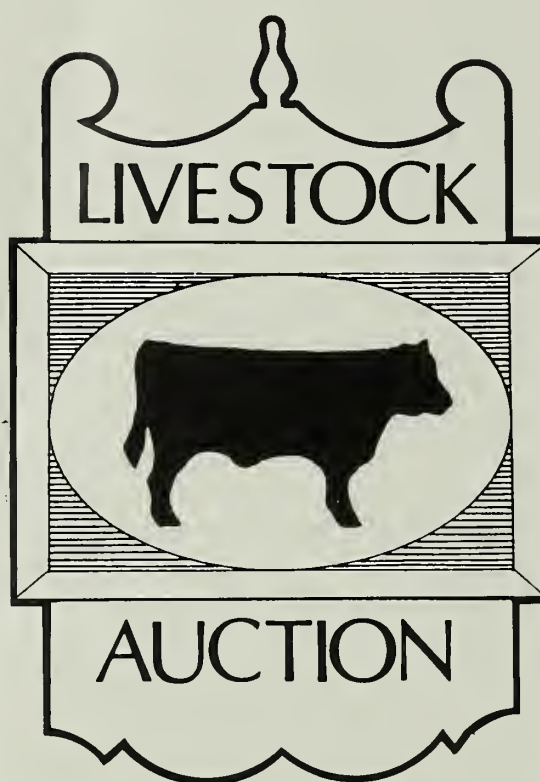
Numerically, auctions are holding their own—an estimated 2,500 in 1970 versus 2,525 in the early 1950's when numbers reached their peak. In terms of business done, the total sales volume handled by auctions has been going up.

True, their share of receipts from slaughter livestock has dropped during the past several decades. However, a high proportion of feeder livestock moves through auctions. And in some areas such as the South, auctions remain the biggest market channel for all livestock species combined.

Where auctions have lost business, it's mainly been due to the competition from meat packers and dealers who buy direct from producers. The one exception is slaughter calves. Over half the Nation's slaughter calves are sold at auction, and the share has been growing in recent years.

Since 1960, as the table in the next column shows, there has been no distinct trend in the percentage of other classes of slaughter livestock moving through auctions.

Since auctions have been holding



their own during the last decade, prospects are that they will continue in the years ahead to grow in line with general trends in the livestock and meat industry.

The development of auctions can be traced to a set of circumstances

that prevailed during the first quarter of this century. Back then, terminal markets were by far the most important source of slaughter livestock bought by packers, and auctions were practically nonexistent. In 1923 the terminals accounted for 75-90 percent of total Federally inspected slaughter supplies.

Beginning around 1930, the terminals gave ground to auctions and direct sales. By 1940, over 2,000 auctions had been established in all States and in most all centers of livestock farming.

Why auctions? The explanations are several. One is that during the Depression, the low livestock prices forced farmers to seek cheaper ways of marketing. Costs of selling through the terminals (including trucking and market charges) absorbed a fair share of producers' receipts owing to the terminals' distant locations—usually at a major rail head—plus the fact that the terminals levied a fixed marketing charge. The local auction offered an attractive, lower cost alternative.

More importantly, in the thirties roads got progressively better and trucks came into wide use. Small lots of livestock could be quickly and economically transported over moderate distances to the local auction market.

Meantime, the packers were extending their periphery of operations by setting up country stations and offices. Due to improved transportation facilities, they also no

PACKER PURCHASES FROM  
AUCTIONS

	Cattle	Calves	Hogs	Sheep & Lambs
	Percent			
1960	16	32	9	11
1962	19	46	11	15
1965	21	49	14	12
1967	18	52	16	16
1969	17	52	14	13

longer had to rely on the terminals.

In time, farmers came to like doing their own marketing. There was the added bonus of social contact at the weekly sale. The auctions became a kind of rural community center, and a source of information on farmers' production and marketing problems.

With the stiffening competition from people buying direct from the farmer, the livestock auction became less and less significant as an outlet for slaughter stock. Unable to muster enough livestock to attract the larger buyers, many small auctions went out of business.

In their place burgeoned more substantial auctions, handling bigger volumes of livestock and using electronic equipment for weighing livestock, doing the accounting and other tasks formerly done laboriously—and at a higher cost—by auction personnel.

The greatest part of auctions receipts is from sales of livestock for feeding and breeding. Adding these sales to those of livestock-for-slaughter, the annual total may run as high as \$6.7 billion per year.

Auctions flourish where livestock are heavily concentrated and where farms are typically small. A major auction area is the North Central region. The South also looms large. Auction numbers there may have grown faster than in any other region since the 1940's. In the Northeast, auctions continue to do most of the business in slaughter calves.

A key ingredient in the formula to successful auctioneering is that the firm must handle a substantial volume of livestock. Otherwise, the auction can't cover costs, nor will many buyers attend the sale. It may well be, as some followers of auction marketing have suggested, that the industry as a whole would have a more secure future if auctions were to become bigger and fewer.

Among other needed changes that might benefit auction marketing: greater specialization in kind and class of livestock handled; selling in

### *At the Cattle Auction*

Most cattle feeders don't sell through auctions, but they do buy from them. In fact, the largest part of the national supply of feeder cattle is procured at auction markets. About three-fifths of the feeder cattle in major feeding centers were bought at auctions in 1967, according to a survey of that year. Another third moved directly to feedlots from farms and ranches. The balance of the feeders were purchased at terminal markets.

Principal markets for feeder cattle differ considerably among regions. Auctions hold the strongest position in the major feeding States of the West. In 1966/67, producers in California and the High Plains bought two-thirds through auctions and about a fourth from farms and ranches. Feedlot operators in the western Corn Belt and Colorado purchased about equal numbers from auctions and from farms.

In the Southeast, the majority of farmers raise part of the cattle they feed. Even so, probably over half the commercial cattle feeders buy most of their cattle in one or more of three ways: at special feeder cattle sales arranged with the help of the extension service; direct from farmers; or from the larger regional auctions.

In the Mountain States, feedlot operators raise up to a third of the cattle they feed, with the remainder obtained through auctions or direct from farmers.

Sources of purchases in the Pacific Northwest vary with the season. In January-June, most cattle are bought at auctions outside the region. In July-December, direct purchases predominate, usually within a 150-200-mile radius of the feedlot.

In the Corn Belt proper and the Lake States, the terminals are a more important source of feeder cattle than in the other regions. But the terminals' business has fallen sharply in recent years. (12)

lots of uniform grade and weight, rather than the customary practice of selling separately the livestock of the different owners; and improved physical facilities for increased efficiency. (11)

## Excess Capacity Vexes Cotton Warehousemen

The cotton warehousing industry is having a difficult time adjusting to the downtrend in cotton production. The volume of cotton stored by the warehouses decreased over 40 percent in the 1965-70 period. But storage capacity increased slightly. As a consequence, average use of warehouse space fell from less than 60 percent to about 30 percent.

Since fixed costs must be spread over a reduced volume of business, the industry's storage costs went up more than 60 percent in 1965-70—from \$3.53 per bale-year to \$5.76. This does not include costs of other services provided by the warehouses, such as weighing, sampling, and compressing of cotton.

An ERS study indicates that only those firms that can keep their costs down will be able to compete in the declining market for warehouse services. Under competitive conditions—in which only those facilities needed to handle and store peak volumes would be utilized—total storage cost would have been reduced to an estimated \$3.59 per bale year, based on 1970 price levels and volumes. This would result in an annual warehouse space utilization of about remained in operation. (13)

## Grain Storage Costs Heading Uphill

An updating of the 1967/68 cost survey of storing and handling grain in commercial elevators shows storage cost in the 1971/72 season to be 20 percent above the levels of 4 years earlier, or an increase of almost 3 cents per bushel.

Combined costs for handling and storing are projected at 22.5 cents per bushel for country elevators (vs. 18.3 in 1967/68); 24.3 for inland terminals (20.0 in 1967/68); and port terminals 19.3 (16.7).

Estimates include cost of 1-year storage plus receiving and shipping charges. (14)

## Casein: Supplies Getting Tight

Once a fairly sizeable producer of casein, the United States now relies almost entirely on imports to meet domestic requirements. The demand for casein has been picking up in recent years. But this year market supplies of casein became short and prices climbed sharply.

Casein is the principal protein in milk, constituting about 3 percent of cow's milk—or around a third of the nonfat milk solids.

It's one of the most complete proteins available, meaning it contains all the amino acids essential to the human diet.

The main industrial uses for casein continue to be in the manufacture of paper (for coating and sizing) and wallboard and plywood (as an adhesive), and in the preparation of plastics, paints, glue, cosmetics, and some manmade fibers. Casein's uses in traditional industrial applications have been declining with the advent of cheaper substitutes.

But the demand for caseinates in food products has grown sharply. Consumption of edible caseinates—or casein that has been converted to more soluble forms—rose from about 1 million pounds in 1955 to 20–25 million in 1966 and may be 60–70 million pounds currently.

Little data are available showing the amounts of caseinates going for specific foods. The largest users appear to be the imitation dairy products, such as whipped topping, coffee whiteners, and whipping powder. These may have accounted for as much as 14 million pounds of caseinates in 1969. Caseinates are also used in instant breakfast foods, as binders in luncheon meats and sausages, as protein supplements in cereals and baby foods, and in bakery products, soups and frozen desserts.

Another use for casein and caseinates has been in milk replacers for calf and pig feeding. Milk replacers

were previously processed from skim milk solids and animal and vegetable fats. Because of the higher prices for skim milk solids, the domestic replacer industry has been using whey with imported casein to approximate the solids in skim milk. With a growing market for milk replacers in the United States during recent years, a greater volume of casein may be going into this use.

All told, U.S. casein consumption came to around 132 million pounds in 1970. It was up 18 percent from the previous 2 years, and about double the consumption levels of the late 1940's.

Prior to World War II, the U.S. casein industry produced some 50 million pounds annually. Since the institution of the dairy price support program in 1949, nonfat dry milk prices have not favored the production of casein. It takes about 100 pounds of fluid skim milk to make 3 pounds of dried casein or 9 pounds of nonfat dry milk. Consequently, the price ratio of casein to nonfat dry milk must be in the vicinity of 3 to 1 to make casein profitable to manufacture. This price ratio has averaged 1.0–1.5 to 1, since 1950 and the start of USDA purchasing of nonfat dry milk.

World casein production has been rising, as has the volume of casein moving in international trade. Almost 300 million pounds were exported in 1969, three times the 1948–52 level. Trade has been increasing at twice the growth rate of world casein production.

However, the export trade in casein has become concentrated in fewer and fewer countries. New Zealand and Australia now account for two-thirds of world exports. What happens to casein production in these countries pretty much determines the world casein supply. In 1969, a widespread drought in New Zealand—No. 1 producer—sharply reduced that country's milk output and thus casein production. Still lower casein production is indicated for 1970/71, due to aftereffects of the drought along with greater

diversion of milk into cheese manufacture.

Strong demand and smaller supplies have pushed casein prices to the highest level in recent years. In late February, wholesale casein prices were reported at 37 cents per pound (Argentina fine ground basis, f.o.b. New York), compared with 24 cents a year earlier. Prices are expected to continue strong in coming months, assuming New Zealand's milk output stays near last year's levels. (15)

## Fish Prices To Jump But Won't Exceed '70 Gains

Shoppers can expect prices at the fish market to be steeper this year than in 1970. But the increase probably won't equal last year's 10-percent jump. Ample fish supplies are expected to hold the increase down.

Inventories of frozen fillets on January 1 were almost 20 percent above a year earlier. Flounder, ocean perch, and whiting fillets were also in greater supply. Cod and haddock stocks dipped from early '70 levels. The decline in cod carryover may have resulted from increased marketings last year, not only by grocery stores and restaurants, but by the growing numbers of fish 'n chips franchises. More abundant varieties of fish may have to substitute for cod in some fish 'n chips outlets.

Frozen salmon stocks at the start of this year were 2½ times larger than in early 1970. Supplies of frozen freshwater fish were generally about the same as last year's tallies.

Shrimp supplies in cold storage surpassed year-ago inventories by close to 15 percent. Those of lobster tails were smaller. Carryover stocks of crabs and scallops remained close to early '70 totals.

January inventories of fish sticks and fish portions were about 10 percent below the 1970 count. And supplies of fish blocks—the raw material for fish sticks and portions—were scaled down nearly a third from year-earlier levels. (16)

# Open Dating— Consumers' Best Guide?

Open dating—labeling retail food products with a readable date that indicates shelf life—has been an issue for some time, and many food stores have already instituted some sort of a food dating program. However, a study of food stability by the Department of Food Science at Rutgers University raises a question as to whether open dating alone is in the best interests of the consumer.\*

Time is not the only controlling factor in the shelf life of a food product. For this reason, the study claims that open dating is not a valid assurance to shoppers that foods are in optimum condition.

Mistreatment during distribution may shorten a food's expected shelf life, or render it unfit for consumption long before any suggested expiration date.

In frozen food, which is obviously highly sensitive to temperature, troublesome abuse areas are the actual storage temperatures and temperature fluctuations. These are more important to quality loss than the actual passage of time. Optimal storage times are temperature dependent, and research on frozen foods has shown losses in quality factors resulting from temperature fluctuations during storage and transportation.

Losses in quality are not necessarily hazardous to health to any known degree. The losses occur mainly in what Rutgers study terms "aesthetic factors," including color, flavor, and texture. Such losses are not generally recognized by the consumer. They are detectable only by trained specialists and scientific instruments.

Temperatures at time of processing may also affect shelf life. Types of equipment used and quality of packing materials also play a part. Thus, identical foods processed on the same day by different manufacturers may have shelf lives that vary considerably.

Food processors are regulated by the FDA "Good Manufacturing

\* The conclusions and recommendations of the report are not necessarily those of the Department of Agriculture.



Practices" that apply to handling and storage on the manufacturers' premises. But the postmanufacturing industry—like transportation companies, wholesalers, distributors, brokers, and retailers—is not controlled in any similar manner.

Some postmanufacturing groups set their own standards or are regulated by the food processor. Many of

these groups, however, have little understanding of the perishability of food products and often overlook the rigorous handling conditions required. Thus, food products are highly subject to quality loss once they're beyond the manufacturer's jurisdiction.

Based on these and other findings on food stability, the report recom-

mends the exclusion of dates that consumers might consider indicative of shelf life duration. Alternative systems of dating and coding were proposed.

The report urges that exteriors of all shipping cases or cartons be imprinted—in colored inks—with an uncoded date of manufacture (DOM), and specific instructions regarding storage and handling temperatures. The open date of manufacture and accompanying instructions would facilitate orderly stock rotation on a first-in, first-out basis, and correct handling temperatures at food supply stages.

The open DOM, however, is *not* recommended for individual food products displayed in retail food stores. The Rutgers team judged that the actual age of a product tells the shopper little about its quality or expected durability. Nevertheless, shoppers may try to base purchase decision on these dates.

Suppose, for example, companies A and B are marketing spaghetti sauce at the same retail price. The shopper notes B's sauce was made a month later, and bypasses A's product because it's "older". But in actuality, A's sauce might retain its quality much longer because of superior processing techniques.

Another recommended procedure is that manufacturers place a code on each unit or package of food to be displayed on retail shelves. The code need not be open, but its individual numbers or letters should be legible to consumers.

Such a code would indicate product lot, and be used for reference purposes only. Consumers would cite the code in relaying complaints to a manufacturer. In turn, the processor could readily locate, and recall the remainder of the lot.

The study also suggests that individual food products be stamped by retailers with an open date of shelf display (DSD) when they are price-marked. Unlike the date of manufacture or an expiration date, the DSD implies nothing about the product's expected shelf life.

## Chilling Experience Prolongs Broiler's Shelf Life

Apart from the obvious—like its size, plumpness, and pigmentation—one "never frozen" broiler is pretty much like the next, at least from the shopper's viewpoint.

Actually, fresh-packed broilers come in two main varieties—ice-packed and chill-packed. The untrained eye can't tell the difference, although sometimes the chilled variety may have a drier look about it.

The big distinction has to do with how the broilers were processed. And as retailers are well aware, the method of processing is an indication of the bird's shelf life. Shelf life, in this case, is measured from the day of processing to the time of eventual sale to the consumer.

All else being equal, the chill-packed bird, whether sold as a whole broiler or as chicken parts, has the longer shelf life. The chill-packed type also commands a higher price at the wholesale level.

The first step in processing is the same for both the ice- and chill-packed birds. Immediately after the birds are slaughtered and dressed at the plant, the internal body temperature is brought down to 40 degrees F. or below, and within a time period of 4 hours or less. This can be done by ice and water chilling, air chilling, or freezing.

Ice-packed broilers are then put into boxes (usually 24 birds to a carton) and covered with 20 pounds of ice. After loaded onto

trucks, the entire shipment may be top-iced also. A variation of this mode of packing is to use ice made from carbon dioxide.

Birds going the chill-packed route are first chilled in an ice water slurry; then cooled at 34 degrees F. for 45 minutes; and finally put through a blast freezer to pull the body temperature down to 28 degrees. The birds are held at this temperature during distribution and retailing.

The lower the temperature, the longer the shelf life. Consequently the chill-packed broilers can be held for a few days more than the ice-packed. For the chill-packed, maximum allowable time between processing and purchase by the consumer is 9-11 days. In the store itself, the birds are usually held not more than 7 days.

This compares with a 5-7 day period, from processor to consumer, for ice-packed broilers. In retail stores, the shelf life is 2-3 days. Birds that have not been sold by the expiration date are removed from the display case.

Retailers have been paying a 3 cents-per-pound premium for chill-packed whole broilers. But this is partially offset by savings in labor, cutting, shrinkage, packaging, rewrapping, and spoilage at the retail store. Disadvantages of the chill-pack system include—a high initial investment in equipment and increased inventory and the rigid requirements of temperature control during distribution and marketing (18)

The open DSD would benefit retailers by simplifying and encouraging stock rotation. And it would promote orderly in-home use based on approximate time of purchase.

Food processors, the study maintains, have an obligation to provide consumers with as much information as possible regarding home storage conditions, and the maximum time their products could be wisely kept before use.

The stated time period should not imply a date of expiration. Instead, the suggested phrasing is, "To obtain *maximum* quality, store below — degrees F. and use within — days (or months) after date of purchase." Such advice, along with the date of shelf display, should appear on each food package.

The use of an open date of manufacture on shipping cartons, unit package coding, and date of shelf display are general guidelines for distribution of all food products. Each food group, however, poses its own unique marketing problems. The utilization of all three methods isn't always feasible.

For example, half of all fresh fruits and vegetables are sold as unwrapped individual pieces. Stamping each with a date of shelf display would be time-consuming and impractical. Moreover, such a date would not be essential to stock rotation, as the quality and condition of these products is easily judged by visual inspection.

Likewise, the date of manufacture on shipping cartons is unnecessary in the distribution of bread. This is usually brought to stores daily in returnable trays by a bakery routeman who removes products previously unsold.

All the recommended procedures should apply to both canned and dried foods—macaroni, cereals, dried soups, etc. At present, labels on some of these products advise, "Store in a cool and dry place." The report advocates a stronger, more specific message: "Do not store in a hot (greater than 70 degrees F.) and humid place."

With frozen foods, more information is needed, because the quality of frozen foods is highly dependent on home storage conditions. The survey advises that frozen food departments display placards listing suggested temperatures and storage duration, based on type of home freezer. (17)

## Fresh Apple Use Pared by the Processor

Fresh apple consumption jumped 10 percent in 1970 and reached its highest point in half a decade—nearly 16½ pounds per person.

Of course, apples have been a favorite fruit ever since Eve. But recently, processed products—apple sauce and apple juice especially—have seen the biggest per capita gains.

Our per person use of canned and frozen apple products has swelled from 3.2 pounds in 1950 to about 6.5 pounds today. At the same time, fresh use has fallen 6.3 pounds.

The rapid rise in processed product use is not unique to apples. Similar trends show up for most fruits—apparently because of changes in consumer tastes and preferences, living patterns that include more working wives, convenience in shopping, and changes in kitchen appliances.

Processed fruits are essentially convenient and timesaving foods and consumers seem willing to pay higher prices, if necessary, to obtain these built-in services.

Anyway you eat them, 1971 promises to be a pretty good year for apples. With average weather, we'll have a crop bigger than 1970's 6,349 million pounds.

Output of apples has been on the uptrend for most of the past 15 years; before that, however, it was in something of a slump.

Yields of today's trees are higher due to improved varieties and better methods of caring for orchards. Also, many of the new trees are dwarf varieties, which can be planted closer together than standard varieties. (20)

## Synthetics Garner Fifth Of Citrus Drink Market

The traditional cold glass of citrus juice with morning toast is being replaced by many consumers with a beverage that is not the real thing.

Synthetic citrus products—those not containing citrus derivatives—comprise about a fifth of the 600 million gallons in annual retail sales of citrus beverages. And synthetic orange drinks, in powdered and frozen form, account for 12½ percent of the total market for citrus beverages.

During 1965–69, synthetic orange drinks' share of the total fruit beverage market grew from less than 5½ percent to slightly over 6 percent. Orange drinks in powdered form increased their market share, whereas that of the frozen synthetic orange juices dropped off.

However, not all the bigger sales of powdered synthetic orange drinks were at the expense of the natural products. More and more powdered synthetics are being bought by consumers such as campers and sportsmen who ordinarily would not buy fresh or frozen varieties.

The popularity of the powdered synthetic orange drink has stimulated considerable interest in developing an acceptable powdered drink made from natural citrus. A determined research program by USDA and industry is now underway to create such a product.

If researchers are successful, the market share of the synthetic powdered orange drink would probably decline. Otherwise, indications are that the powdered synthetic orange drink will retain—but not significantly expand—its current market share during the next 10 years.

Either way, the per capita consumption of natural citrus juices is expected to increase 25 percent by 1980. This assumes that new citrus groves, plus technological developments in the industry, will provide greater supplies at prices competitive with those of the synthetics and substitutes. (19)

# SOUTH AFRICA

*Self-sufficient in nearly all agricultural commodities, South Africa has yet to overcome the strongest impediment to sustained growth in farm output: vagaries of weather.*

In the United States, roughly 1 acre in 4 consists of cropland. In South Africa, the ratio is 1 to 10.

Undoubtedly, more land could be put to the plow in South Africa—already one of the continent's top three agricultural producers. But at this time, and at the present levels of technology, the costs would be prohibitive.

The most invincible of all roadblocks to development is posed by climate; specifically, erratic and low rainfall and scarcity of natural water supplies. Hardly a decade goes

by that the country does not experience a series of damaging droughts.

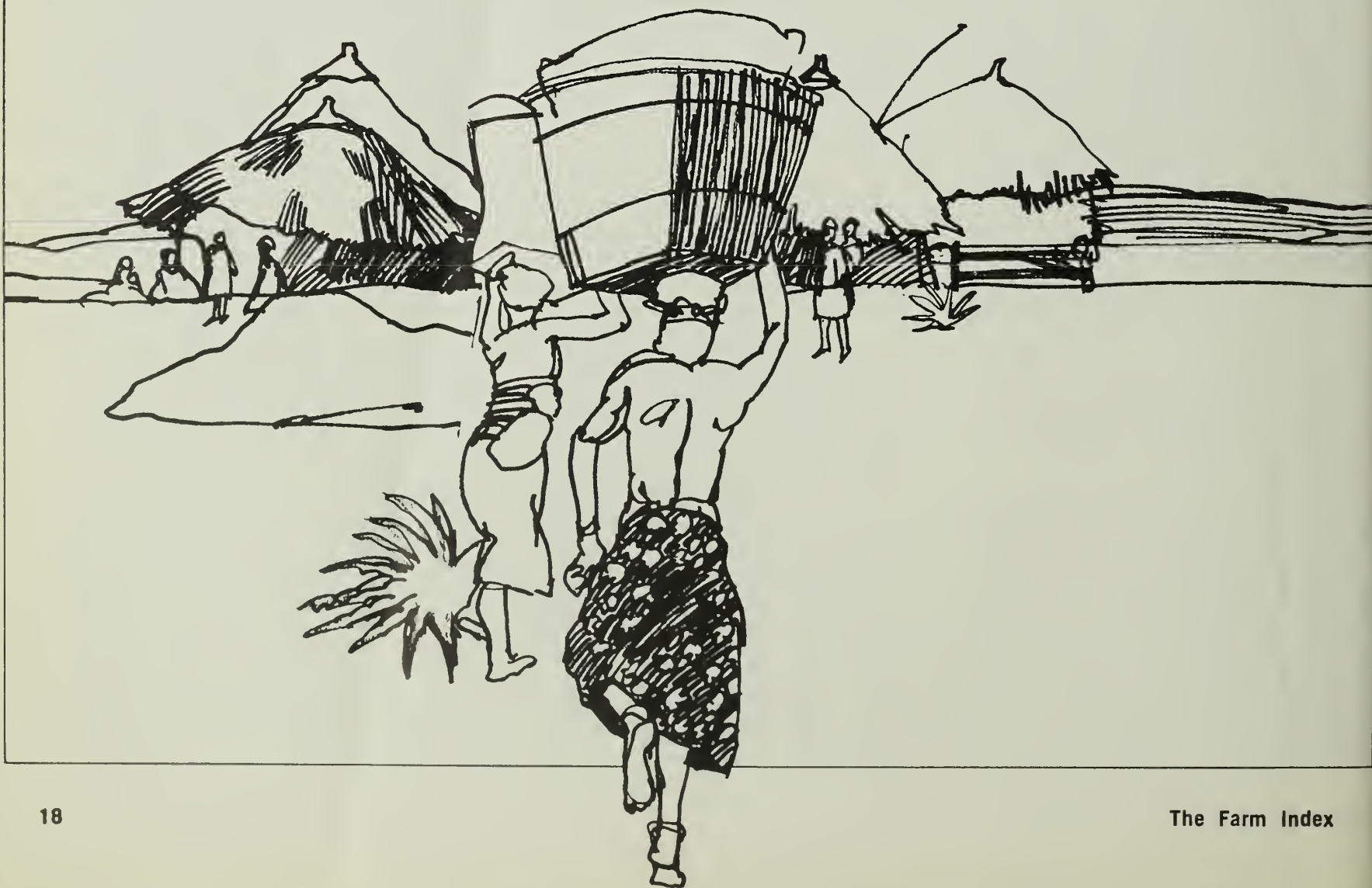
The most recent dry spell, in 1970, lasted more than 8 months. The eventual rains came in time for good crops of grain sorghum and corn. The corn harvest, at 6.4 million metric tons, was the second largest on record. But production was down for many other commodities, wool in particular. Some 3 million sheep had to be liquidated due to reduced carrying capacity of pastures. The herd now numbers an estimated 36.6 million head. The drought's effect on wool production and wool quality may linger for several years.

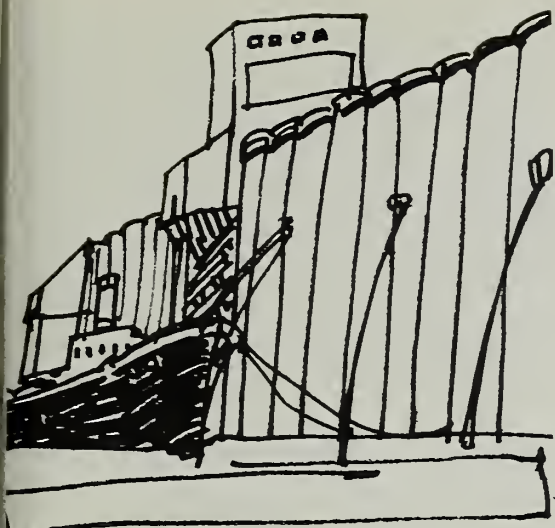
Wool from Merino sheep is a major foreign exchange earner for South Africa. It ranks second only to gold and diamonds. Also important

are exports of fresh and canned fruit, corn, sugar, and animal feeds.

Just as weather problems hamstring efforts to raise farm yields and total agricultural production, climatic extremes also limit South Africa's potential as a world trader in agricultural commodities: the Republic has trouble establishing itself as a reliable supplier and customer for certain farm products. As a corn exporter, for example, in some years South Africa has been among the top three world suppliers, but in other years the Republic has had to import corn.

On the other hand, South Africa owes much of its agricultural might to climatic factors. In the Southwest the climate is "mediterranean," in the Northeast, "near tropical," and





in the Transvaal Highveld, "temperate." Thus, the country can grow a great variety of farm products, and often export them at an advantage over other world shippers. As a Southern Hemisphere fruit producer, South Africa's apples and peaches reach the market when northern supplies are low and prices are relatively high.

A net food importer 60 years ago, the Republic is today Africa's foremost producer of livestock and dairy products, sugar, corn, wool, pineapples, citrus and deciduous fruits. The country is also the major user and producer of fertilizer.

Commercial agriculture began to develop after World War I with the opening of virgin lands in the interior. Production rose sharply during World War II in response to the bigger international demand for food. However, the gains in production are also credited to the government's program of price and marketing controls begun in 1937.

Nearly 90 percent of the total value of agricultural production is under the supervision of 21 quasi-public commodity boards. Some are mainly concerned with domestic marketing; others control both domestic and export marketing. Most control imports. Equally varied are the means of controlling prices, ranging from price supports and pooling schemes for certain commodities, to guaranteed prices and contractual arrangements for others.

Marketing promotion both over-

seas and in the domestic market is partly subsidized by government and partly paid by levies assessed on crops. Levies also finance some industrial research in crop utilization.

Though the country is self-sufficient in most agricultural products, commercial production is confined mainly to farms and ranches operated by whites. The predominantly African Bantu reserves produce only about half their own food requirements. The Bantu reserves are largely situated in the eastern part of the country. Even though rainfall is adequate, agriculture suffers from overstocking of grazing lands, erosion, poor crop yields, and rough topography.

### *Flowers Get a Lift*

If it's true that plants and flowers have their emotional ups and downs, then 1970 was a joyous year for plants that get a lift out of travel.

U.S. imports of fresh cut flowers and buds were valued at \$1.7 million in fiscal 1970—nearly double the trade of the previous year and representing a 17-fold gain from 6 years earlier.

Canada, with \$638,000 of the 1969/70 cut flower bouquet, replaced Ecuador as the leading supplier. Colombia, Australia, and the Netherlands were also important sources.

U.S. imports of all nursery and greenhouse stock (including cut flowers) totaled \$18.9 million, up 15 percent from the previous year. Tulips and hyacinths led among the bulb imports. Nearly all came from the Netherlands.

While the trade in greenery imports was flourishing, our export boutonniere of cut flowers wilted to \$1.1 million in 1969/70, or about half the value of year-earlier shipments.

U.S. exports of foliage, shrubs, and bushes dropped 22 percent to \$680,000. At \$1.1 million, shipments of bulbs, roots, and corms fell for the third straight year. Rose exports, however, rose to \$871,000 from 1968/69's \$687,000, with nearly all the rose stocks going to Canada. (22)

The government in recent years has endeavored to spur the economy of the tribal homelands. Agriculture is getting priority. Through a land-use capability system, cultivation is being restricted to those lands with best possibilities for tillage, with grazing and tree crop cultivation being promoted on the hillsides. New irrigation projects are also being established.

South African officials continue to show concern over the possibility that the United Kingdom may join the European Community. Almost a third of South Africa's \$600-million exports of farm products go to the U.K. In the event the U.K. were to be admitted to the EC, the privileges now enjoyed by South African produce would presumably be lost to associate EC members. Specifically affected would be exports of fresh and canned fruit, wine, sugar, preserved meat, and fishmeal. (21)

### **Veers in Cotton Trade To Benefit LDC's**

A bigger world demand in prospect for cotton may aid economic growth in less developed countries (LDC's) judging from the market outlook for 1980.

Under intense competition from manmades, cotton is expected to capture less than half the world fiber market—10-percent less than in the mid-1960's. However, total usage of cotton is projected higher in 1980—almost a third above levels in the mid-1960's, based on expected growth in world population and incomes.

Also by the onset of next decade, the pattern of world cotton trade will undergo substantial change. The economies of the LDC's stand to benefit. The LDC's—many of them already dependent on cotton as their major earner of foreign exchange—will supply over half the world demand.

World trade in cotton textiles (yarn, fabric, and clothing) is projected to exceed trade in the mid-1960's by about 40 percent. Around

half of these textile exports will originate in the LDC's, compared with a third during 1965-67.

Meantime, developed countries are expanding their cotton textile imports. Their exports, however, are holding about even. By 1980, Japan is anticipated to be the only major developed country where textile exports exceed imports.

Dependence upon textile imports will be reduced, if not eliminated altogether in most of the LDC's. For example, textile industries are developing in several East and West African nations. Uganda now produces enough yarn, fabric, and clothing to fill almost all its domestic requirements. Some LDC governments currently forbid the importation of any cotton textiles.

Many LDC's find it desirable to expand textile exports because their value is higher than cotton lint. Cotton clothing exports produce earnings three to six times greater than equivalent lint exports. Also, the development of textile mills stimulates domestic economic activity.

Currently, the LDC's contribute three-fifths of total world exports of cotton lint. Their portion by next decade will probably rise to two-thirds, bringing the share to over 3 million metric tons. Their imports account for about 17 percent of the world's total.

Combined trade in cotton lint and textiles in 1980 could result in net earnings of \$1.5 billion for the LDC's—up \$600 million from the annual average in 1965-67.

As net earnings from trade in cotton lint are projected to decline slightly, all the gains in earnings will be from textile exports. Hong Kong, India, the UAR, South Korea, Pakistan, and Taiwan—the largest LDC cotton textile exporters in the mid-1960's—are expected to glean most of the growth in foreign exchange. Comparative costs, product pricing policies, import restrictions, and national trade and development policies are the factors behind the projected changes in trade patterns in the years ahead. (25)

## Uptrend in Taiwan Exports Seen Weakening

From near bankruptcy following World War II and heavy reliance on food assistance from other countries, Taiwan (Republic of China) has since become one of the Far East's leading exporters of agricultural commodities.

The value of these exports reached \$260 million in 1969, up about 8 percent from a year earlier and more than 75 percent of the 1963 level. Sizeable increases were registered for shipments of meats, fruits, and vegetables.

Agricultural exports are projected to continue at high levels through 1980, according to a study by ERS in cooperation with the National Taiwan University. However, Taiwan's imports of farm commodities—in 1969, totaling \$277.6 million—will probably rise faster than exports.

Per person use of agricultural products will accelerate rapidly during the next 10 years, reflecting further urbanization and gains in per capita incomes of approximately 5 percent annually. Total consumption of corn, dairy products, and eggs is expected to more than triple during 1970-80.

In view of the country's limited land resources, much of the bigger demand will have to be provided through imports—particularly of animal feeds, dairy products, wheat, and cotton.

A large volume of these imports will continue to be of U.S. origin. (In 1969, agricultural imports from the U.S. were valued at \$107 million.) But the ERS study also notes that certain commodities imported from the U.S.—corn, soybeans, cereals, cotton, and tobacco—may account for a diminishing proportion of the Taiwan market in 1970-80. Reason is the prospect of sharpening competition from other exporters to Taiwan, as well as the country's desire to diversify the sources of its imports.

Declines are projected for Tai-

wan's shipments of rice and sugar. But these will be more than offset by larger exports of fresh fruits and vegetables, animal products, and cotton goods. Exports of canned pineapples and mushrooms to the U.S. are projected lower. In 1970, U.S. imports of Taiwan's agricultural products came to \$50.5 million, primarily vegetables, fruits, and sugar. (23)

## Mexico's Agriculture Paces Latin Nations

From 1940 to 1965, Mexico's agricultural output increased at rates well above those of other Latin countries. Production grew by an average 4.6 percent a year—considerably faster than the 3.3 percent growth of the country's population.

Meanwhile, diets improved. And exports of farm commodities, which mounted steadily during the 25-year period, became the principal source of foreign exchange earnings.

The impressive gains in agricultural growth are attributed largely to the development of irrigation and 'modern farming' methods. Land reform programs were almost as important. More than two-thirds of Mexico's rural development funds in 1940-65 went to finance irrigation projects. The amount of arable land increased 2 percent annually.

As farmers' purchasing power became greater, they bought more fertilizer, seeds, insecticides, and irrigation water. The combined use of these purchased inputs grew at an annual rate of more than 8 percent throughout the period covered by the review. Major emphasis was also placed on rural education, farm credit, and research and extension programs.

The objective of the land reform program, which was started in 1917, has been the parceling and redistribution of large holdings. By 1960 new landowners had acquired 29 percent of the country's arable land, 43 percent of the cropland, almost half the publicly irrigated acreage, and 54 percent of farm units. (24)

# Recent Publications

**WORLD DEMAND PROSPECTS FOR COTTON IN 1980: WITH EMPHASIS ON TRADE BY LESS DEVELOPED COUNTRIES.** Richard S. Magleby and Edmond Missiaen, Foreign Regional Analysis Division. FAER 000.

World demand prospects and future supply sources of cotton lint and textiles are examined to determine their implications for the export earnings of less developed countries. World cotton consumption in 1980 is projected at 14.8 million metric tons, compared with 11.3 million in 1967.

**WHEAT AND FEED GRAINS IN THE GREAT PLAINS AND NORTHWEST: STUDY AREA DESCRIPTIONS AND STATE STATISTICAL SUMMARIES.** William F. Lagrone, and Roy E. Hatch, Farm Production Economics Division; and Glenn A. Helmers, University of Nebraska. Great Plains Agricultural Council Publication 38.\*

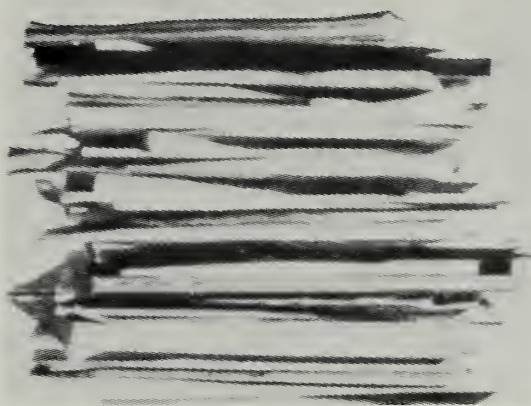
This is a companion publication to a study summarizing the major results of programming resources of the wheat-feed grain producing regions of the Great Plains and Northwest.

**ECONOMIC EVALUATION OF LIQUID MANURE DISPOSAL SYSTEMS FOR DAIRY CATTLE.** N. D. Kimball, Farm Production Economics Division, and L. V. Lenschow and R. E. Rieck, University of Wisconsin. Univ. of Wisc. Bull. 597

Wisconsin dairymen get rid of cattle wastes by converting the manure to a liquid. Tests show the system greatly enhances the fertilizer value. (See September 1970 Farm Index.)

**HIRED FARM LABOR: 1966—PATTERNS; FUTURE DEMAND PROSPECTS; PROPOSED FARM WAGE LEGISLATION.** Verner N. Grise, Farm Production Economics Division. Stat. Bull. 462.

This report provides data on the hired work force and the wages it



*The publications listed here are issued by the Economic Research Service and cooperatively by the State universities and colleges. Unless otherwise noted, reports listed here and under Sources are published by ERS. Single copies are available free from The Farm Index, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. State publications (descriptions below include name of experiment station or university after title) may be obtained only by writing to the issuing agencies of the respective States.*

receives. Proposals for farm wage legislation are discussed, and effects of increased wage rates and other factors in farm employment and wages are evaluated. (See page 6 this issue.)

**COST OF STORING AND HANDLING COTTON AT PUBLIC STORAGE FACILITIES: 1969/70, WITH PROJECTIONS FOR 1971/72.** Joseph L. Ghetty and Whitman M. Chandler Jr., Marketing Economics Division. ERS 472.

Based on a continuing study, this report analyzes cotton warehousing operating costs for 1969/70 and projects costs for 1971/72.

**ESTIMATED COST OF STORING AND HANDLING GRAIN IN COMMERCIAL ELEVATORS, 1971/72.** Allen G. Schienbein, Marketing Economics Division. ERS 475.

This study updates the cost analysis of a 1968 survey of 96 commercial grain elevators and develops estimated handling and storage costs

associated with operating commercial grain elevators in 1971/72. (See page 14 this issue.)

**THE AGRICULTURAL SITUATION IN WESTERN EUROPE: REVIEW OF 1970 AND OUTLOOK FOR 1971.** Europe and Soviet Union Branch, Foreign Regional Analysis Division. ERS For. 311.

The review focuses on major agricultural and economic developments of concern to U.S. agricultural interests. The report also provides an analytical comment for shortrun policy decisions and furnishes data on current developments in the agricultural and trade of Western Europe—the major commercial market for U.S. agricultural exports.

**A HISTORY OF SUGAR MARKETING.** Roy A. Ballinger, Marketing Economics Division. AER 197.

This report traces developments in the marketing of sugar and its principal competitors in the U.S. and, to some degree, in other countries. It is particularly concerned with countries from which the U.S. has obtained large supplies. Government policies toward sugar and sugar trade between other nations are also studied.

**CONSUMER ATTITUDES TOWARD LEATHER IN SHOES AND CLOTHING.** Edward M. Knott, and Margaret Weidenhamer, Statistical Research Service. MRR 922.

The results of this study, devoted primarily to consumer attitudes toward materials used in upper parts of shoes, can provide guidance to the leather industry in developing improvements in product characteristics. (See Farm Index, February and March 1971.)

**AN AID TO PLANNING LAKE USE AND DEVELOPMENT.** Chauncey T. K. Ching, FPED, and George E. Frick, University of New Hampshire, cooperating with the Farm Production Economics Division.

In planning the development of a water-oriented resource such as shore front property, many factors must be considered in order to maintain a desirable level of environmental quality. This planning guide develops criteria based on the inter-relationship of lake surface area and shoreline length.

**NOTES ON ROMANIA'S AGRICULTURAL ECONOMY.** Lynn S. Bickley, Foreign Regional Analysis Division. ERS For. 304.

This is the first of a series of notes on the Communist countries. The report presents highlights of Romania's agricultural policy, production and trade. Data for the late 1960's are compared with earlier years. (See October 1970 Farm Index.)

**U.S. PEACH INDUSTRY: PART 1. STRUCTURE, TRENDS, AND CONSUMPTION PROJECTIONS TO 1980.** Yvonne Davies, and Warren Trotter, Marketing Economic Division. AER 200.

This is the first of a two-part study in which the economics of the peach industry are examined. Recent trends in production, utilization, price, and consumption are analyzed for both fresh and processed peaches. The changing patterns of consumer demand for peach products are projected to 1980. (See February 1971 Farm Index.)

**COSTS AND RETURNS: MIGRATORY-SHEEP OPERATIONS, UTAH-NEVADA, 1960-69.** Wylie D. Goodsell, Farm Production Economics Division. AER 195.

Returns were substantially higher the past 7 years on migratory-sheep ranches in Utah-Nevada, the top U.S. sheep and wool producing area of its kind. Responsible were generally higher prices received for lambs, improved range conditions, increased market weights of lambs, and greater output per ranch. (See page 7 this issue.)

**EFFECT OF URBAN EXPANSION ON DAIRYING IN THE LAKE STATES. 1949-69.** David E. Cummins, Farm Production Economics Division. AER 196.

This study investigates the long-run dynamic forces underlying the recent abrupt changes in Lake States dairying. It also assesses the future dairy structure in the region and its potential as a milk supplier.

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NOTE: Unless otherwise indicated, authors are on the staff of the Economic Research Service (ERS) with their divisions designated as follows: Economic and Statistical Analysis Division (ESAD); Economic Development Division (EDD); Farm Production Economics Division (FPED); Foreign Development and Trade Division (FDTD); Foreign Regional Analysis Division (FRAD); Marketing Economic Division (MED); and Natural Resource Economics Division (NRED).

# Economic Trends

ITEM	UNIT OR BASE PERIOD	1967	1970	1970	1970	1971	1971
			YEAR	Mar.	Jan.	Feb.	Mar.
<b>Prices:</b>							
Prices received by farmers	1967 = 100	—	110	114	107	112	112
Crops	1967 = 100	—	101	98	103	105	108
Livestock and products	1967 = 100	—	118	125	110	117	114
Prices paid, interest, taxes and wage rates	1967 = 100	—	114	113	117	118	118
Family living items	1967 = 100	—	114	112	116	117	117
Production items	1967 = 100	—	109	108	112	113	114
Ratio <sup>1</sup>		—	—	101	91	95	95
Wholesale prices, all commodities	1967 = 100	—	110.4	109.9	111.8	112.8	113.0
Industrial commodities	1967 = 100	—	110.0	108.9	112.2	112.5	112.8
Farm products	1967 = 100	—	111.0	114.6	108.9	113.9	113.0
Processed foods and feeds	1967 = 100	—	112.0	111.8	111.8	113.3	113.7
Consumer price index, all items	1967 = 100	—	116.3	114.5	119.2	119.4	119.8
Food	1967 = 100	—	114.9	114.2	115.5	115.9	117.0
<b>Farm Food Market Basket: <sup>2</sup></b>							
Retail cost	Dollars	1,080	1,225	1,224	1,212	1,215	1,228
Farm value	Dollars	414	480	510	450	473	476
Farm-retail spread	Dollars	666	745	714	762	742	752
Farmers' share of retail cost	Percent	38	39	42	37	39	39
<b>Farm Income: <sup>3</sup></b>							
Volume of farm marketings	1967	100	103	83	114	82	86
Cash receipts from farm marketings	Million dollars	42,693	48,678	3,584	4,157	3,330	3,600
Crops	Million dollars	18,434	19,589	1,003	1,851	1,102	1,100
Livestock and products	Million dollars	24,259	29,089	2,581	2,306	2,228	2,500
Realized gross income <sup>4</sup>	Billion dollars	49.0	56.2	56.3	—	—	56.1
Farm production expenses <sup>4</sup>	Billion dollars	34.8	40.4	39.8	—	—	41.5
Realized net income <sup>4</sup>	Billion dollars	14.2	15.8	16.5	—	—	14.6
<b>Agricultural Trade:</b>							
Agricultural exports	Million dollars	—	7,174	571	672	636	716
Agricultural imports	Million dollars	—	5,667	524	507	420	500
<b>Land Values:</b>							
Average value per acre	1967 = 100	—	<sup>6</sup> 118	<sup>7</sup> 117	—	—	<sup>8</sup> 121
Total value of farm real estate	Billion dollars	—	<sup>6</sup> 207.3	<sup>7</sup> 208.2	—	—	<sup>8</sup> 214.0
<b>Gross National Product: <sup>4</sup></b>							
	Billion dollars	793.9	976.5	959.5	—	—	1,018.4
Consumption	Billion dollars	492.1	616.7	603.1	—	—	644.7
Investment	Billion dollars	116.6	135.7	133.2	—	—	142.9
Government expenditures	Billion dollars	180.1	220.5	219.6	—	—	228.0
Net exports	Billion dollars	5.2	3.6	3.5	—	—	2.8
<b>Income and Spending: <sup>5</sup></b>							
Personal income, annual rate	Billion dollars	629.3	801.0	787.6	827.4	830.4	836.3
Total retail sales, monthly rate	Million dollars	26,151	30,381	29,801	31,100	31,341	—
Retail sales of food group, monthly rate	Million dollars	5,759	6,787	6,679	6,895	6,910	—
<b>Employment and Wages: <sup>5</sup></b>							
Total civilian employment	Millions	74.4	78.6	79.0	78.9	78.5	78.5
Agricultural	Millions	3.8	3.5	3.5	3.4	3.3	3.4
Rate of unemployment	Percent	3.8	4.9	4.4	6.0	5.8	6.0
Workweek in manufacturing	Hours	40.6	39.8	40.2	39.8	39.5	39.9
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	3.36	3.31	3.50	3.51	3.52
<b>Industrial Production: <sup>5</sup></b>							
	1967 = 100	—	106	108	105	104	104
<b>Manufacturers' Shipments and Inventories: <sup>5</sup></b>							
Total shipments, monthly rate	Million dollars	45,712	55,554	55,223	56,504	57,225	—
Total inventories, book value end of month	Million dollars	82,825	99,614	96,982	99,801	99,555	—
Total new orders, monthly rate	Million dollars	45,928	55,009	54,339	57,377	57,653	—

<sup>1</sup> Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. <sup>2</sup> Average annual quantities of farm food products purchased by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1959-61—estimated monthly. <sup>3</sup> Annual and quarterly data are on 50-State basis. <sup>4</sup> Annual rates seasonally adjusted first-quarter. <sup>5</sup> Seasonally adjusted. <sup>6</sup> As of November 1, 1970. <sup>7</sup> As of March 1, 1970. <sup>8</sup> As of March 1, 1971.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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